



THE FIRST OPEN AND COLLABORATIVE DATA ECOSYSTEM

Initial Guide for the Advisory Ecosystem

Version 1.0



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ABBREVIATIONS

CSV Comma Separated Variable

EDC Eclipse Dataspace Connector

e.g. For example (exempli gratia)

e.V. Eingetragener Verein (German for registered association)

FAQs Frequently asked questions

IDSA International Data Spaces Association

IT Information Technology

IEC International Electrotechnical Commission

ISO International Organization for Standardization

JSON JavaScript Object Notation

KIT Keep it together

OaaS Onboarding as a Service

OEM Original Equipment Manufacturer

PS Productive System

QS Quick Start

SDE Simple Data Exchanger

SME Small and Medium Enterprises

UAT User Acceptance Testing

UIP User Information Portal

WG Working Group

WP Word Package

XML Extensible Markup Language



1. EXECUTIVE SUMMARY

The automotive industry is currently undergoing a transformation towards more digitalisation where data and data exchange will be key. This transformation has become necessary to address the challenges like sustainable development, climate change and material scarcity. The Gaia X lighthouse project of Catena X is one major positive example this sort of activities. As one of the first collaborative data ecosystems, it has the objective to establish a standardised global data exchange for the automotive supply chain based on European values and data sovereignty.

As an open ecosystem Catena-X welcomes all sizes of stakeholders within the automotive value chain and particular attention to SMEs who represent more than 75% of the automotive supply chain. SMEs often do not have the financial and technical capabilities to establish the IT infrastructure that is required when joining the Catena X network. However, without the involvement of SMEs, the required transition of the automotive industry will not be successful. Therefore, the Catena-X community is eager to support those SMEs who want to participate and contribute to the success of Catena-X with information, and tools that are easy to implement through setting up an advisory ecosystem that is able to support a significant number of SMEs to a high level of quality data management.

This document is the first step in this direction and contains a detailed description of the Catena-X onboarding journey that consists of four main steps. Each step represents one major aspect of a successful onboarding to the Catena-X ecosystem. It starts with the onboarding guidance that delivers first insights of the network, the participants, and the general setup. The following steps are dedicated to the business value that Catena-X can contribute to the automotive value chain vehicle but this must be identified and defined by the SME. Once this objective is clear, the next three steps give an overview of the technical aspects of the onboarding. The last but not the least step highlights the importance of an organisational enablement system that considers and describes concepts like data quality and the opportunities that have been created with the link to Catena-X.

Each of these steps can be done by the SME on its own or with the support of an advisor. The latter is the second addressee of this document. The advisor can use the content of this document and the supporting material in the follow up document to firstly support SMEs in each onboarding step and secondly to create their own business as a certified Catena-X advisor. The requirements to achieve a certification by Catena-X are described in the final part of this document. Neither the described certification scheme nor the rest of the content is meant to be exhaustive and final. This first version illustrates a certain direction, and the expert group onboarding of the Catena-X association will develop regular updates.

2. INTRODUCTION

2.1 Foreword

Catena-X aims to be the most user-friendly environment for building, operating, and collaboration using end-to-end data chains. This will be needed to meet the challenge of the onboarding of future users of the Catena-X network. This should be achieved as simply as possible, with little effort to maximise the expected benefits for the companies wanting to be connected - regardless of the



"Catena-X readiness level", technical skills, organizational capability, or digitalization progress of the companies.

To meet differing needs of Catena-X users, the onboarding to Catena-X must be realized in various ways. This goes from fully supported onboarding process by selected service providers/consultants (focus of this document), to support for special topics only, to onboarding on one's own information (DIY). The goal for all these options is always a standardized onboarding process, which ensures fairness, consistency, and transparency during the connection to Catena-X.

One of the goals is to define standardized, scalable, and flexibly usable onboarding modules as a standardized gateway to the world of Catena-X, to be used by certified consultants & service providers to support SMEs in onboarding to Catena-X.

Another main aspect is the setup of a skill development program that enables, firstly, a certain knowledge transfer to future Catena-X advisors and, secondly, a high level of quality in the provided service.

A platform for service providers should furthermore be established, through which the respective providers can gain access to the broad Catena-X network or connect existing partners to Catena-X via the standardized onboarding process as a service.

2.2 About Catena-X

Catena-X is the first collaborative, open data ecosystem for the automotive industry, linking global players into end-to-end value chains - as simply, securely, and independently as never before. The shared goal: a standardized global data exchange based on European values. The goal is data sovereignty. Participation is rewarded with above-average resilience, innovative strength, and earnings opportunities. And since Catena-X is open, other industries and ecosystems can be integrated at any time.

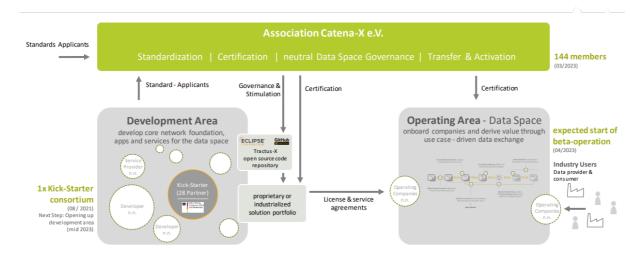


Figure 1: The Catena-X System Approach

The transformation of the automotive industry is in full swing. Electric vehicles replace combustion engines, whilst the circular economy enables resources to be recycled. The necessary transformation of the automotive sector is massively influenced by geopolitical disputes, pandemics, and climate change. These are all challenges that no company can meet on its own today.



Material flows should be digitally traceable throughout the entire supply chain. Finally, legislators will demand transparency in the future and the mission of Catena-X is therefore to enable the digital flow of data across the entire supply chain. Many suppliers in the automotive industry are extremely uncertain about the added value of sharing their data and rate the risk of data loss or the negative consequences of so-called lock-in effects as very high. Consequently, there is a lack of business models, incentive mechanisms and the right technology. Hence, the idea behind Catena-X is to connect automotive manufacturers, suppliers, and service providers of the entire supply chain.

Catena-X is a collaborative effort which works through the participation of many stakeholders. The goal is to establish a globally active network where users meet suppliers, SMEs meet large companies and suppliers meet recyclers. All companies can achieve new value creation, especially through the cross-company use and exploitation of data. This is how new business models are created within the supply chain.¹

2.3 About this Document

Catena-X acknowledges that a major stake of the automotive supply chain is represented by small and medium sized enterprises (SMEs) who do not have the financial, human capacities and resources to invest in large IT solutions. However, the necessary transition of the automotive industry to meet the upcoming challenges will not be successful without SMEs who form the backbone of the European economy. That being the case, Catena-X is eager to support companies and enterprises of all sizes with services and information to enable this transition successfully.

This document is meant to provide an overview of all necessary steps and resources and function as a guide for the successful onboarding of SMEs. It addresses enterprises who are willing to join the Catena-X journey on their own by guiding them through the complete onboarding process and providing the necessary information to achieve this. It also addresses small and medium sized advisory and consulting companies who serve SMEs with business and IT-Support. These advisory businesses are also welcomed to join the Catena-X Advisory Ecosystem for SMEs.

However, although this document serves as a guideline for the onboarding it does not claim to be complete nor exhaustive. The aim is to further develop this document as part of the future Expert Committee for Onboarding, who will develop and set binding standards both for the content described here and for the onboarding service partners.

2.4 Advisory Ecosystem

The Catena-X family invites advisory and consulting companies of all kinds who are willing to promote the successful onboarding of SMEs to join the Catena-X Advisory Ecosystem. One of the few requirements is the commitment to provide high-quality advice at fair and reasonable cost. Catena-X will support this undertaking with information and predefined content, such as tools like this document and a qualification and certification scheme to proof exceptional support and consulting capabilities.

¹ Catena-X (2023) Vision & Goals, https://catena-x.net/en/vision-goals (last visit 19th April 2023).



3. THE CATENA-X ONBOARDING JOURNEY

3.1 How, why, and what - The Onboarding Process

The Catena-X onboarding journey follows a generic scheme, that is independent of the size of an organization. It is divided into four consecutive steps that inform and aim to make aware, and to enable on a technical level, and finally points to, and opens diverse opportunities to interact with Catena-X. These four consecutive steps are the following:

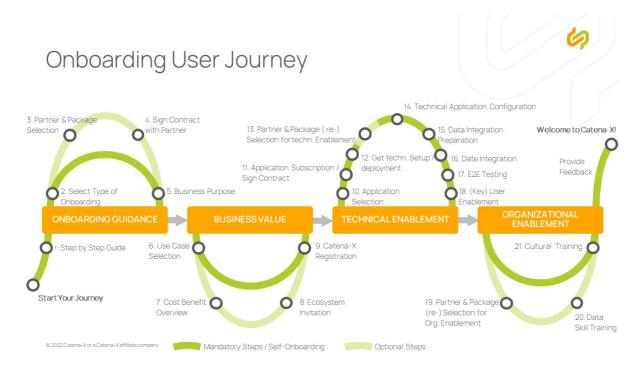


Figure 2: Catena-X Onboarding User Journey

Onboarding Guidance

This step conveys an essential set of information about the nature of the network, its benefits, and the general setup of an onboarding journey. The objective of this first step is to enable the SME to be onboarded to be able to make a qualified decision on potential business opportunities of the network.

- Business Value

The successful onboarding requires a qualified business value for the SME to be onboarded. Therefore, it is essential to evaluate the business' need of the SME and define a clear business purpose and value proposition.

- Technical Enablement

The third step is dedicated to the technical enablement covering legal prerequisites but also preparatory work for the IT environment and the final onboarding to be able to use the capabilities of the network. It also includes the adaptation of use case specific requirements and deliverables.

Organisational Enablement

The final step secures a sustainable functioning and value increasing operation of the network connection. It includes support for data governance and data quality issues to



ensure sound and reliable data management. It also has the objective to raise awareness for new business opportunities by working actively with the Catena-X network.

These overall onboarding steps with their respective activities and underlying principles are valid for all onboarding types, whether by self-onboarding without any support, with external support based on pre-defined support packages, or with individual agreed support. The identified four onboarding steps keeps the onboarding party, supporting partner and the network always aligned.

Self-Onboarding

Perform the onboarding by self-onboarding with own resources and without external support. This might require a deeper insight into their own IT applications and network infrastructure. The Catena-X family supports enterprises who choose this journey on their own on one hand with technical information customer involvement services, but on the other hand also with an increasing number of supporting applications like onboarding wizards, data mapping tools and Catena-X connectivity provided as SaaS. Please consult Catena-X for the latest available services.

Predefined Support Package

Quality and reliability towards the value proposition is key when it comes to the onboarding of SME partners. Catena-X supports this by providing support packages that cover all onboarding steps in a comprehensive manner. Advisory partners can use this package as best practice for their services towards the enterprises to be onboarded. This package usually contains training material, supporting background information and a commented time schedule and consulting scope. Predefined support packages are suitable for SMEs who are new to Catena-X or are still undecided about the best approach and how to work within a low to medium digitisation level.

Individual Support Package

The content of predefined support packages can be used also as best practices for individually aligned and agreed conditions between the advisor and the SME. This individual approach makes sense in long lasting relationships and SMEs who have a medium to high level of digitalisation and already have a clear vision on how Catena-X can improve their business.

3.2 Onboarding Guidance

Catena-X acknowledges that SMEs can be defined by their company size based on the number of employees or financial indicators like yearly turnover but not regarding their IT landscape or technical capabilities. The high level of specialisation and innovation of SMEs often requires an "out-of-the-box-thinking" and individual IT solutions that differ from large enterprise concepts where standards are key. Nevertheless, the goal of the standardised Catena-X onboarding process is the successful onboarding of an SME within a timeframe of eight to twelve weeks. SMEs are guided through the identification of their specific needs and subsequently in their decision of which onboarding package to choose.

3.2.1 We guide you step by step.

Catena-X thrives to standardize the global data exchange based on European values; it is as simple as that. This requires breaking down the complexity of the global supply chains down to comprehensive concepts and tasks. The Catena-X onboarding process follows a similar approach.



By guiding SMEs, step by step through the onboarding journey, the normalized process creates a guardrail with pre-defined activities and tasks that can be scheduled and with expected measurables.

The first activity is to get involved with the Catena-X ecosystem that covers, but is not limited to explicitly outline, the benefits of the network, its nature and why collaboration is important to meet the future challenges. After this first contact point with Catena-X, an overview and schedule with all relevant information and tasks must be drafted. This includes inter alia:

- Vision, goals and added value of Catena-X
- Already available use cases and their value proposition
- Already available solutions and related companies (as best practice)
- Current events of Catena-X
- Overview of Catena-X information sources
- Contact persons and stakeholders along the onboarding process.
- Overview and time schedule for the potential onboarding

Catena-X supports this first step by providing a series of activities like tools and regular events to enable advisors and consultants to include Catena-X onboarding support into their service portfolio. The access to this material is also given to SMEs who intent to start this journey on their own. As there is an ongoing development of concepts, tools, and information sources, please consult the Catena-X website for the latest available solutions and supporting tools:

- Service Portfolio "Get Involved" with training concept, slides, and handouts.
- Questionnaire to enable the selection of the onboarding type.
- List of onboarding partners
- Training material for specific topics
- List of FAQs
- White papers and case studies
- Best practice scenarios

The objective of this step:

The SME receives a high-level overview and sufficient information to make a qualified decision about their potential involvement with Catena-X.

3.2.2 Select your onboarding partner.

Besides the "self-onboarding" respective "do it yourself" scenario where an enterprise performs the onboarding with their own internal resources and capacities, the inclusion of onboarding supported by an external partner could be considered. In such cases, the type of support and type of onboarding should be evaluated and defined to enable the ability to select a suitable onboarding partner.

The questionnaire for self-assessment can be used to guide through the selection process and define the level and type of support required. Currently, three types of onboarding support are considered, however, due to the individuality of the SME, more specific and individual options could be developed and agreed between the SME and their onboarding partner:



Onboarding with an advisory partner with a focus on business support

This option is recommended for SMEs who already have an improved IT-infrastructure and need support or want to focus on the process-related aspects of the onboarding. The intention here is to complement the IT expertise of the SME with external business support.

Onboarding with an advisory partner with focus on technical support

This option is recommended for SMEs who use individual and internal IT applications for their business processes and want to set up an own infrastructure to connect these applications with the Catena-X network. The intention here is to complement the IT expertise of the SME with external IT support focusing on network architecture.

Onboarding with an "Onboarding as a Service" provider

Finally, this option is recommended for SMEs who want to focus on own processes and applications and intend to use available solutions for the connection to the network. Within the Catena-X ecosystem there are already solutions available who provide OaaS to enterprises of all sizes and with a huge variety in implementation depth.

On SME level, the type of onboarding is mostly an individual decision. Catena-X supports this decision-making process with tools like the self-assessment questionnaire described in Chapter 3.2.1. The selection criteria for a suitable onboarding partner could be inter alia (see also questionnaire in Annex Fehler! Verweisquelle konnte nicht gefunden werden.):

- What skills are required by the advisory?
- What experience level do the advisor, and the SME have?
- What language is used?
- Which region is targeted?
- What is your budget?
- Which Catena-X use cases are relevant?

To ensure high-quality support and the compatibility of available solutions, Catena-X has defined and set up a certification process for onboarding partners (see also in Chapter Fehler! Verweisquelle konnte nicht gefunden werden.) and Catena-X ready solutions (see Catena-X website2). With a growing ecosystem of onboarding partners, the Catena X association and operating companies will evaluate the implementation of an automated partner search tool based on filter criteria.

The objective of this step:

To formally agree with the onboarding partner about the scope, success criteria, timeline, costs and necessary customer's contributions or obligations for the next phase, or the "Business Value" process steps.

In "simple" onboarding scenarios, it might be useful to agree upon the whole onboarding scope, i.e., including "Technical Enablement" and "Organizational enablement". However, in case of a changed scope due to the results of the Business Value phase (e.g., changed type of participation, way of

² https://www.catena-x.org.



system integration etc.), it might be the case that the selected onboarding partner for the Business Value scope will not be enabled and/or not certified for executing the following steps of Technical and Organizational Enablement. Hence, in these cases, the onboarding partner would need to be reselected.

3.3 Business Value

The successful onboarding requires a qualified business value for the SME to be onboarded. Therefore, it is essential to evaluate the business needs of the SME and to define a clear business purpose and value proposition.

3.3.1 Define your business purpose.

The objective of this step is to identify the business purpose that the SME wants to pursue by joining the Catena-X network. A draft of this business purpose was already defined in the step "Select your onboarding" (see section 3.2.2). However, in this early process step only a quick introduction into Catena-X and its opportunities could be provided and hence, only a draft of the business purpose could have been defined. Now, with the support of the onboarding partner, a thorough, interactive and individual advise can be provided. This helps to thoroughly understand and judge the scope of Catena-X, its usefulness case, and the possible benefits from participating in Catena-X. On that basis, the SME shall take a decision on the role that it wants to take and select the use cases with which it wants to start with.

What is required to achieve this?

As input, the draft of business purpose from the step "Select your onboarding" (see section 3.2.2), will be used. In addition, a list of possible roles that a SME can take on within the Catena-X network is needed, together with a description of associated tasks / duties on the one hand and business potentials on the other. These roles are mainly (excerpt):

Data provider only, small amount of data and low frequency

Preliminary small and very small enterprises who take over this role to just fulfil the requests or obligations from their partners to provide data via Catena-X; no further interest in using use cases or do anything else in Catena-X on their own or with their suppliers or other business partners. If only few data inputs with a low frequency need to be provided, the data can be captured and provided "manually", i.e., no backend integration to customer's systems needs to be implemented. The Motto of this customer is one that says, "Don't disturb my business".

Data provider only, larger amount of data and higher frequency

Very similar to previous role, however due to larger amount of data and higher frequency of data provision, interfaces to internal systems are recommended instead of manual data capture. Since the onboarding party only wants to provide data, the interfaces only need to be unidirectional, i.e., "upstream". While discussing further potentials of Catena-X, this customer type might change to the next type (see below).

Small or medium company, data provider and data consumer, using one or very few use cases.

This onboarding party wants to exploit the benefits from Catena-X by using one (or very few) use cases. Frequently those will be use cases related to compliance topics, i.e., the



motivation of the customer is rather driven by "obligations" and the need to fulfil legal requirements instead of "business potential" thinking. In this case, the onboarding partner shall emphasize on presenting further benefits of Catena-X to improve the partner's business mindset.

Nonetheless, this customer type quite frequently will have very limited resources to engage in new ways of doing business, so perhaps rather a roadmap for extending the potential of Catena-X in the future will be developed instead of extending the scope for the initial onboarding.

Since the onboarding party wants to use Catena-X use cases, the selection of use cases will be in the centre of defining the business purpose for this onboarding party type. In addition, the design of a bi-directional backend integration will be required, i.e., both "upstream" and "downstream" interfaces. Depending on the size of the SME and its position within the value chain, a thorough analysis of the partner network in both directions (customers as well as suppliers and other business partners) might be recommended to obtain ideas for further application of use cases compared to the one(s) that the customer initially had in mind.

- Small, Medium, or large company, using multiple use cases and a data provider

 This role is the "ideal" role from Catena-X's perspective, i.e., broad utilization of Catena-X's potentials and acting as data provider and data consumer; so, being an active member of the Catena-X network. Ideally, this onboarding party type shall be used as facilitator and multiplier amongst its partner networks.
- Large (or medium) company, entrepreneurial usage of Catena-X
 On top of the above role, this onboarding party actively seeks for new business opportunities by developing new use cases or own business applications and provides this in the network for utilization by others.
- Small (or medium) company, usage of one (or very few) use cases, but no data provision

This role is comparable with the first or second role described above, but upside down. I.e., this onboarding party only uses one (or very few) use cases but without integrating its own data into the network. The utilization of this use case does not need data from the onboarding party itself, i.e., no bi-lateral data exchange. However, with respect to the guiding principle of Catena-X "We share – you share", the onboarding party might be asked by business partners, that provide the data for him, to also provide some other data in return. In this case, appropriate use cases from the onboarding party's partners will need to be identified so that the customer can also bring data-based value into the network and not only exploit the data from others.

Providers of Applications and other Services

These roles are out of scope of this onboarding guideline and hence not described here.

The concrete business benefits from using the current Catena-X use cases can be derived from the description of the respective product owners / suppliers of the business apps.



The advice regarding business purpose can be done as a "self-service" option by the SME itself. If the SME decides to acquire support by the onboarding partner for this step, a "minimum" option for a "Business Purpose Workshop" shall be available.

What steps must be taken to achieve this?

Based on the first draft of the business purpose, the SME wanting to join Catena-X shall define who in their company needs to involve in the decision about the business purpose. This frequently includes:

- Representatives from (top) management / business sponsor(s)
- Operational lead / driver of the initiative to onboard to Catena-X
- Representatives from the business units, who will benefit from joining the network, i.e., potential users of use cases. This may be:
- Sales department, covering the needs of Catena-X use cases from the SME's perspective (e.g., fulfilling requirements for reporting, data provision & collaboration)
- Purchase department, covering the demands towards the suppliers and other service providers with regards to data provision & collaboration
- GRC departments, covering the legal & compliance (reporting) needs; especially the sustainability reporting requirements.
- Strategy, innovation & planning departments, including the responsible for assessing opportunities for partnering and participating in new eco collaboration systems
- Representatives from the IT department / responsible for the system landscape / IT infrastructure / interfaces / data spaces
- If applicable: Representatives from the data governance organization

Once the relevant stakeholders have been identified the business value related to Catena X, a workshop shall be set up for definition of the business purpose. Depending on the complexity of the company, a predetermined management buy-in (or search for a management sponsor) might be useful. The workshop for elaborating the business purpose might be a half day workshop in case of straightforward, simple situations, or might become a series of workshops in cases of multiple units needing to be involved (or convinced to be involved).

In very complex situations (e.g., multi-division and/or multinational scenarios), a phased approach might be recommended by starting with one or two selected units or business purposes. After having implemented the onboarding for selected units successfully, the activities will be repeated for the remaining units, use cases, divisions, and/or regions. The onboarding partner will help to design the appropriate approach for this phase and the layout for the workshop(s).

In the workshop(s), to lay the foundation, all participants shall gain a common understanding of the "WHY-WHAT-HOW" of Catena-X to enable all participants to contribute to the following discussion and to be appropriately prepared for taking the decision of the business purpose(s) – and maybe a prioritization order in the case of multiple use cases or business purposes that may be applied.

The objective and deliverables of this step:

 A vision statement of the company with regards to Catena-X (describing the "WHY" joining Catena-X).



- The aspired role(s) that the company want(s) to take over in the Catena-X network shall be defined, maybe substantiated by a "development roadmap" in cases that different roles shall be taken over by successive partners (e.g., starting with a specific use case as a data provider over starting a first use case as consumer to even becoming provider of self-developed business apps).
- A clear goal that needs to be achieved with the Catena-X participation is including a list of existing Catena-X use cases that shall be addressed and implemented.
- Ideally, a responsible person, sponsor, or driver for each role shall be defined to grant a subsequent implementation of the defined business purposes and/or roles.

3.3.2 Business case

In this onboarding phase, the previously defined business purpose shall be quantified from a financial perspective. Although not all financial benefits (cost savings and/or additional revenues) as well as all incurred costs (one-off costs and recurring costs) will be available in detail in this early phase of the onboarding. The idea is to obtain a high-level estimation of the financial impact when joining Catena-X.

What is required to achieve this?

As a pre-condition, the business purpose from the previous phase needs to be available to do a pre-selection of Catena-X use case candidates. Some use cases only make sense for specific roles.

Additionally, some information about incurred costs shall be available, i.e., Catena-X participation fees, costs for using the business applications, operation costs for the required infrastructure / interfaces and an estimation of the one-off onboarding costs (internal & external, technical, and organizational change).

What steps must be taken to achieve this?

As a first step, the Catena-X use cases that shall be used must be selected. The open and collaborative nature of Catena-X provides the basis of various and creative use cases. However, in an early stage of interconnection it might be feasible to select the current and already relevant use cases that might be applicable and possibly complemented by a trajectory roadmap to grow with subsequently added use cases.

The decision on which use cases will be relevant is driven by two perspectives: which use cases does the SME want to use as a data consumer and which use cases are relevant for the company in its role as data provider. The selection of use cases will frequently depend on agreements with customers and/or suppliers of the company to perform a feasibility assessment of implementing the desired use case. Because for (almost) every use case, the interaction and exchange of data with other partners along the value chain is a pre-condition. A collaboration with partners within the network is required as this is the core purpose of the Catena-X network.

This phase will start with an in-depth presentation of the currently available use cases and their business value to the potential Catena-X participant. On this basis, the SME shall select the use cases it wants to address and maybe define a roadmap for implementing their own future use cases.

Most likely this phase will consist of a series of workshops and/or discussions to elaborate which use case(s) will provide the highest benefit for the customer and allow for a (high level) assessment



of the feasibility of implementation. The objective of such workshops is to identify and formulate a clear business value for each selected use case. Otherwise, it is unlikely that the business value will be realized. For this (high level) feasibility assessment, the following aspects shall be analysed as following:

- Affected number of entities, companies, units, or business partners, i.e., the more participants are needed, the more complex the implementation will be and the more unlikely a successful (and/or fast) implementation will be possible. Perhaps a scope reduction may help to start with a "Minimal Viable Product" instead of a "All-In-One" solution. Preferably, start with a use case that only requires the direct partners of a company ("one up / one down" paradigm) a use case will only be feasible, if the participants of all tiers contribute their data.
- Number and complexity of data objects to be exchanged: some use cases can go live by exchanging a well-defined number of data objects (via single aspects of digital twins) per product, typically containing a small number of data fields ("just what is needed"). Other use cases will only unfold their full power if a sizeable amount of different data objects, with a huge number of data fields is exchanged. Obviously, the number of different data objects and their scope will determine the effort needed to integrate the backend systems, their proprietary data structures, and semantics onto the Catena-X data space. In the best case, especially when the participant has selected the role "data provider only", a simple data input tool (e.g., such as the "Simple Data Exchanger" SDE) that allows for manual input of the required data fields without the need to implement interfaces to existing (legacy) systems will accelerate the implementation significantly.

After the selection of Catena-X use cases, the financial impact must be considered and addressed. This frequently will include the high-level estimation of:

- Potentials for cost savings, i.e., by increasing the process efficiency of already existing
 data exchange processes, such as delivering information to the B2B portals of the
 customers, retrieving and processing of received information from suppliers or partners,
 data management efforts for collecting and compiling information for regulatory or other
 reporting (including efforts for manually processing data in Excel), etc.
- Potentials for additional revenues. These may include existing revenues (e.g., if participating in Catena-X will become mandatory to continue business with specific business partners), as well as new business opportunities, e.g., from acquiring new customers due to Catena-X advantages (marketing effect), exploring new business models (e.g., entering "Manufacturing as a Service") as well as additional revenue streams from becoming a Catena-X service provider by e.g., providing own business apps.

Subsequently, a high-level estimation of costs will complete the business case. This will include:

- One-off costs, such as internal and external onboarding costs (technical implementation, costs for organizational / process change, and optionally onboarding advisory)
- Recurring external costs, such as Catena-X participation fees, fees for using one specific Catena-X infrastructure (to be paid to the Catena-X Operating company), fees for utilization of Catena-X business apps. Optionally: costs for running the required infrastructure (if Catena-X functionality will be used "as a Service")



Recurring internal costs for operating the interfaces and infrastructure (if not outsourced
"as a Service", see above), costs for managing the data and adhering to the data
sovereignty rules of Catena-X.

The phase will be completed by the prioritization of use cases to be implemented, most likely using the ratio of (quantified) business value and the efforts / costs being evoked and considering the feasibility and speed of implementation. There might be some more criteria to be considered for scoring the different alternative use cases, e.g., contribution to fulfil compliance regulations, impact on company image (e.g., sustainability) etc. A suitable method to rate and compare the alternatives using multiple criteria is the concept of "Multi-Layer Value Benefit Analysis".

What is the objective of this step?

The result of this exercise should be a business case providing a financial outlook on benefits and costs of participating in the Catena-X network. It shall serve as one of the decision criteria for the company's management, if and to what engagement degree a company shall be active in the network. However, the pure quantifiable financial perspective from such a business case frequently will not be the only decision criteria for joining the Catena-X network.

3.3.3 Invite your ecosystem.

This phase of the onboarding journey is meant to "use the momentum" of a company that just has decided to become part of Catena-X to encourage business partners of that company to join Catena-X as well. However, depending on the defined business purpose and vision for participating in the Catena-X network, this step might not be mandatory and is linked to size and business environment of the SME.

Being part of the automotive supply chain implies that partners, authorities, suppliers, and customers of various levels ("tiers") are involved. Depending on the data needs that a SME has and the data requirements of those partners, authorities, suppliers, and customers, it might be feasible and useful to complete the data provision chain by inviting their own ecosystem to Catena-X as well.

In case of taking part in one of the existing Catena-X use cases, the necessity to invite their own network may be accelerated, as those use cases usually follow the end-to-end approach of the data value chain.

The objective of this step:

In case this onboarding step is considered as necessary or helpful, the objective is to close the data related gaps with the data value chain that might be an obstacle for their own data needs and requirements from partners, authorities, suppliers, and customers.

3.4 Technical Enablement

The technical enablement is dedicated to all technical and IT related topics during the onboarding process. It covers four mandatory and consecutive steps that contain themselves, one more or subsequent activities that must be performed. The objective of technical enablement is to establish the connection to the Catena-X ecosystem.



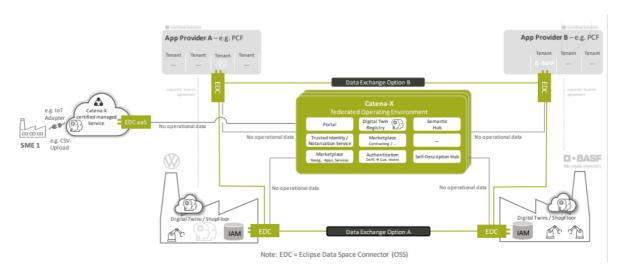


Figure 3: Catena-X Ecosystem

Most of these activities require improvement of IT skills and a certain expertise. These skills might be available within the organisation or may be provided by the advisory partner. In case of an advisory partner, it must be ensured that it can provide all necessary skills, or a reselection of the advisory partner must be considered, i.e., once the business value has been defined, the SME should reassess if the onboarding advisory partner can also provide all the required technical skills. This should be considered by the SME, because supporting the "Business Value" or the "Technical Enablement" requires different sets of competences from the advisory partners (see also 4.1 Becoming a Certified Onboarding Partner).

3.4.1 Operations

At latest when the SME starts the technical onboarding a registration at Catena-X is required. Where this registration happens depends on regions, intended use case, the respective offering and the processes of the related operating company (see structure in 2.2 About Catena-X). However, this process step is also possible at any time earlier within the onboarding journey.

The registration process must be performed by a person who is authorized to act on behalf of the organization. The entry point is an invitation email to register and to create the company record within Catena-X. Therefore, this first step requires various and already prepared legal documents of the organization like commercial register excerpt, certifications, and others legal entity requirements. The required documents will be related to the type of organisation. More information on the requirements will be given on the Catena-X website and its respective operating companies.

The current Catena-X uses cases and commercial applications.

Once the registration is done, the organisation will have access to more detailed information on current use cases and already existing applications. The latest offer of business application can be found on the marketplace of the respective operating company and addresses one or more of the Catena-X use cases. The respective marketplace lists all providers and their applications that have been approved as Catena-X ready³. Applications that have not been approved by the Catena-X association as Catena-X ready will not be able to use the given infrastructure. Therefore, it is important to use official Catena-X marketplaces only. However, the successful onboarding does not

³ Catena-X Certification Process, https://catena-x.net/en/catena-x-einfuehren-umsetzen/zertifizierung/ (last visit 19th April 2023)



require to use any of the offered applications. They mostly provide innovative and valuable functionalities but are not mandatory.

This is different when it comes to specific use cases. The Catena-X participation does not require to stick to a certain use case, but most use cases require specific adoptions to be compatible. The current Catena-X use cases (see Annex 0 Annex III - List of Available Use Cases) cover many aspects of the automotive supply and value chain so it is most likely that one of these will be linked to the SME susiness and operations.

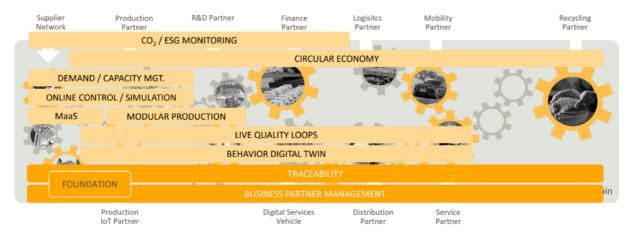


Figure 4: Current Catena-X Use Cases

Catena-X offers a range of KITs that are related to specific use cases and usually contain all necessary documentation on requirements, prerequisites, and the added value. In case of a subscribed application, the respective application provider is executing the necessary steps to technically setup or deploy the application. Those steps are the responsibility of the respective provider of the managed service or application provider.

3.4.2 Data Space

After the subscription of the relevant business applications, the selection of the onboarding type and / or the intended use case, the technical configuration must be initiated.

The setup is mainly driven by the complexity of the business application in use at the SME (i.e., in case there is any), the criticality of the business process, and the technical capabilities. Not all scenarios can be described but should have been explained by the onboarding partner in the Business Value phase (see 3.3 Business Value).

The following process steps are a generic guidance through the technical configuration and must be adapted for individual purposes. Some business application providers will offer pre-configured templates to reduce the effort and to reflect best practices. They are also accountable for the content of these templates. General information and how-to implement guides for the enablement services like for example the EDC will be provided by the Catena-X association and / or the operating company.

What is required to achieve a successful onboarding?

Critical for the successful implementation and configuration is on the one hand the availability of comprehensive information about their own infrastructure and on the other hand the support of the advisor, respectively the application provider.



What steps must be taken to achieve this?

Exemplary work packages and deliverables for advisory partners and SMEs in their role as customers (with central digital twin registry):

Work Package	Deliverable Advisory	Deliverable SME
 Basic setup of application Define and agree entity setup Create setup on QS Create test scenario on QS Create setup on PS Work package (WP) approval 	Explain master data structure and requirements - Provide Excel template for master data setup - Create setup on QS and PS - Create a test scenario on QS (including test users)	 Provide necessary data for setup by completing the relevant Excel template Review and approve entity setup
 Technical connectivity Exchange parameter information Set-up QS connectivity Set-up PS connectivity Testing and bug fixing WP approval 	Propose preferred connection type Provide required information for connectivity according to EDC parameter sheet Implement technical connection Execute functional tests to ensure connectivity Provide approval for work package	Standard EDC connection types will be used (recommended) The customer is prepared and equipped to exchange messages In case of message attachments, messages will be exchanged in an EDC format
Process configuration Execution of process workshops As-is documentation To-be documentation Application parameter documentation Configuration of profiles Functional test WP approval	Prepare and conduct process workshops Review existing As-Is documentation Provide list of configuration parameters and their process impact Document To-Be process Document parameter settings for implementation	Provide documentation of relevant process status quo Participate and provide input for process workshops Approve To-Be process and parameter settings Analyse and plan internal efforts for sending and processing messages
 User acceptance test (UAT) Create training material for Key User Key User training 	Create training documentation (Quick Guide) for key users	Nominate at least two individuals per site as key users



- Define test scenarios and test
- Bug fixing and retesting
- WP approval

- Provide online training sessions for Key Users
- Provide a sample of test cases recommended for implementation
- Track and manage UAT issues in a central list
- Ensure these individuals attend the training sessions
- Define and provide a list of test cases to be tested during UAT
- Execute User
 Acceptance Tests
- Report UAT issues in a structured way so they feed into the central file managed by onboarding partner
- Approve UAT

User Information Portal (UIP)

- Setup of UIP for SME and business partners (languages to be defined)
- Create user training information
- Create user training videos
- Conduct user trainings
- WP approval

Define and align on UIP concept

- Add UIP-pages for additional language (EN)
- Language is proposed by onboarding partner but needs to be confirmed by the Customer

Provide content for UIP

- Maintain UIP localization in intranet
- Review and approve
 UIP
- Review and approve translations

Table 1: Examples for Work Packages

What is the objective of this step?

The objective of this step is to configure and establish the connection to the Catena-X network. It covers the setup and implementation of the EDC which is the foundation to connect with the Catena-X data space (See Figure 3: Catena-X Ecosystem), i.e., activities with external relationships. It does not cover any activities required to enable internal systems to work with the Catena-X ecosystem.

3.4.3 Data Management

The Catena-X Ecosystem as described above (See Figure 3: Catena-X Ecosystem) covers various types of data exchange with other partners. The data exchange will be of mutual benefit only if all partners have a data governance and data management scheme in place that can be used as a quardrail to ensure the data sovereignty of each partner.

Therefore, the type of data and the data flow should be defined as a blueprint for the following data integration. This can be achieved in workshops with own resources or the support of advisors and should contain at least following topics and questions:

- Which data is affected?
- Where is this data stored internally?
- What applications are used to manage this data?



- What is the security and confidentiality level of each data set?
- What steps are necessary before data can be shared?
- How should data be prepared for sharing?

Hereby, both perspectives, i.e., data and system related should be considered and defined.

3.4.4 Data Integration

Once the external connection has been established, the goal of the next step is to enable the SME to consume the data of other business partners of the Catena-X ecosystem and to provide their own data to be consumed by others. This requires that all applications have the ability of mapping and understanding each other's data. Therefore, Catena-X has developed and provides shared semantic models that must be used for any data exchange.

This data transformation layer must be implemented or configured to work with their own applications and be able to map internal data stored within their own databases with the respective semantic model. An overview of all semantic models can be found in the Catena-X standard library⁴ and the models required by specific use cases are mentioned in their respective KIT or use case standard.

In case of semantic models designed to be exchanged via digital twins of specific assets there is an implicit linkage between the asset and the data exchanged via the unique ID of the asset.

What steps must be taken to achieve this?

For the exchange of the data between business partners, it is necessary to identify the data that is defined by the data exchange interface. This is predicted by the use case in which the business partners want to participate. The goal is to clarify which data sources can deliver the required data and what the necessary steps are to provide the data. This requires that the

- use case is selected
- data model used by the use case is understood
- unique asset identifier is available or can be generated for those assets data is exchanged for (for example for discovery in digital twin registry)
- data plane technology is clear (EDC)

Within a workshop together with the responsible process owners of the business partner, the data delivering processes and systems will be identified and data mapping will occur according to the interface definition as created. Furthermore, it must be evaluated if it is necessary to implement an additional data transformation layer to fulfil the interface requirements. For the interface mapping either Excel / CSV of the data model or JSON- / XML- Scheme Templates can be used.

3.4.5 End to End Testing

The data integration and finally the technical enablement must be completed and approved by an end-to-end testing procedure. The Catena-X ecosystem provides a guided approach and defined

⁴ https://catena-x.net/de/standard-library#c2352



testing methods to achieve this. Please consult the Catena-X association website or the instructions provided by the application provider or the operating company.

3.5 Organizational Enablement

Once the technical enablement is done it is essential to adopt data governance guidelines and integrate them into the organisations daily business. An established connection with the Catena-X ecosystem increases, on one hand, the efficiency and reliability of a data exchange between the industry partners and open, on the other hand, various opportunities for innovative business cases. However, to benefit from these improvements and opportunities, the established connection must be maintained and used actively and with the right stance on technical and cultural capabilities.

Consequently, the final phase of the Catena-X onboarding journey covers trainings on data governance and organisational culture to ensure mutual benefit.

3.5.1 Data Skills Training

When acting as a data provider or data consumer within the Catena-X ecosystems it will be necessary to address and provide technical and organisational data skills like data governance and data quality to ensure a safe and reliable data exchange with other industry partners. Exchanging data by using the Catena-X network requires data that needs to be available, up to date, consistent, complete, reliable and in the right format. Furthermore, the storage and handling must be secure and done on agreed policies and standards to avoid unauthorized access, unintended modifications, loss, and other events that might compromise ownership data of data that belongs to others. Thus, data skill trainings can help to achieve this.

What is required to achieve this?

Training concepts for **data governance** and **data quality** need to be aligned with technical and organisation requirements of Catena-X and the specific use cases. While trainings on data governance should follow a holistic approach as it touched general technical and legal concerns, trainings for data quality should be strongly linked to specific use cases and their requirements.

Advisors need to be aware about these **requirements** and be able to adopt them to the SME's needs. Furthermore, **data models**, **semantics**, existing **documentation**, and **usage policies** need to be known. Advisors should be able to map customer data to the specific Catena-X use cases' data models so that they can support and prepare it for use. For this, they need an understanding of how to provide data as input for specific applications. Catena-X provides certain **standards** describing format, details, content, versions, configuration, etc. for the specific use cases or applications.

When it comes to **data quality**, the general basic and use case specific requirements need to be known. Data quality has several **technical dimensions** like consistency, integrity, accuracy, completeness, validity, and timeliness.

The system-dependent dimension is very individual as it relates to the organization and its structures. Therefore, it is difficult to compare and consider it for evaluations. In contrast, inherent data quality is more comparable among applications and organizations and has a high potential to be considered in evaluation, based on the general principles, characteristics, and attributes. There are many frameworks and dimensions defined to evaluate data quality as such. However, once the most common and most applied framework is laid down in the ISO/IEC 25000 series - Data Quality Model and Measures.



In addition to that, there are **cultural and legal dimensions** of data quality.

The provision of data is linked to **compliance** and **liability**. Data must be provided at a specific point of time, by a specific stakeholder in the value chain that it can be used as information for specific applications. In closed networks, a linear data provision concepts like "single point of truth" or "trustworthiness of source" might work, but in open networks as the "network of networks" Catena-X, where data can have multiple sources, data is aggregated and republished continuously. These concepts will not ensure a sufficient level of trust. Therefore, an agreed and reliable process that ensures a certain level of trust for all participants in the value chain is indispensable.

Trust in data and information is always a key concept when it comes to the value of data but at the same time, trust is just an unclear human judgement based on prior experiences which must be replaced by clear **frameworks** or even **certifications** such as ISO/IEC 25000 for systems and software quality requirements and evaluation, or ISO/IEC 8000 for data quality and enterprise master data.

Poor data quality results in reduced efficiency, increased cost, lack of compliance, reputational damage and misanalysis or even missed opportunities and lost revenue.

Availability of data and systems needs to be ensured and **policies describing access rights** defined that ensure **data sovereignty** (total control over use of data). Thus, consultancies need a certain expertise on creating and applying these policies.

What steps must be taken to achieve this?

Advisors need to design and implement training and make these available. Catena-X supports such activities by providing predefined concepts and training material as a first starting point. Please consult the Catena-X website for the latest available tools and information.

Activating key users

Crucial for the success of the project is the "acceptance" of the relevant user in their specific roles. Value will be created when users adhere to the defined processes in the business applications. Common tools for Management of Change can be applied. Pure IT change management will not ensure the expected results (savings). The SME must set up an internal user organization supported by the onboarding partner.

Catena-X will share best practices of user enabling organizations to enable other SMEs for "self-onboarding". An example is user concepts and governance models. The best practices will come from the community and will add value to the system. Nevertheless, the onboarding partner can provide additional best practices and templates for user enabling. User enabling in a project or in the ongoing business must be distinguished from the overall system. Specifics can also be justified in the criticality of the business processes.

Core components of a user enabling organisation:

User and Role Model

Comprehensive definition of the specific roles of a user to ensure the common understanding of the expectations and duties of the users. This is fundamental to encourage all users. A best practice database can support the "standardization" in the future.



Governance Model

Accountabilities, objectives, and importance must be clear and transparent for the users in the organisation. The models will be impacted by the general organization of the SME, but an onboarding partner should add external expertise.

3.5.2 Culture Training

Data-driven businesses treat data as strategic assets and use data analysis and interpretation in the decision-making process. Thus, each course of action is validated before committing to it. Data analysis gives real-time insights and predictions to optimize performance.

The success of a data-driven approach is reliant upon the quality of the data gathered and the effectiveness of its analysis and interpretation. Data needs to be accessible and available. Catena-X helps to make data accessible while keeping sovereignty over own data. Considering data as an asset brings better services, more cost effectivity, earlier innovation compared to competitors, transparency and understanding. However, this requires the adoption of data related topics into daily business and processes. Therefore, it is recommended to establish an organisational culture that supports the handling of data as a prerequisite of a successful and sustainable future business. To achieve this, various concepts and frameworks are available to facilitate such thinking that can be used as potential ground for training and courses for SMEs to allow the successful onboarding to the Catena-X ecosystem. It is important to have in mind that Catena-X does not recommend any specific concept, as in particular in the context of organisational culture it is indispensable to consider the individual needs of the SME. So, concepts and frameworks like the FORTH Innovation Methodology⁵, the FourSight Thinking Profile Assessment⁶, Kirton 's Adaption-Innovation Theory⁷, and the Cognitive Biases Poster by Board of Innovation⁸ should be considered as examples to evaluate the expected direction of a potential improvement.

Additional ideas for a strong innovation team and broad support

Innovation starts with top management. So, make sure that this management is involved from the start of the innovation process and is regularly actively involved. Also think of any other managers within the organization who can create support or whose responsibility it is directly related to regarding the innovation.

Include subject specialists in the innovation team if the innovation assignment is directly related to their responsibility. Their knowledge and expertise are essential.

Involve people from all departments of your organization. Do not leave innovation to one person or one department. Not only Research and Development nor should only the Marketing departments be involved in this.

Involve people from all levels of the organization. From top management to the executive 'workshop' and the cleaning assistant. Everyone has a different way of looking and thinking. This diversity is extremely valuable during the creative process.

⁵ FORTH Innovation, https://www.forth-innovation.com, last visit on 13th March 2023.

⁶ FourSight, https://www.foursightonline.com, last visit on 13th March 2023.

⁷ KAI Foundation, https://kai.foundation, last visit on 13th March 2023.

⁸ Board of Innovation, <u>https://www.boardofinnovation.com/tools/cognitive-biases-poster/</u>, last visited on 13th March 2023.



Make sure your team consists of people with different thinking styles. Make sure to involve thinkers, dreamers, and doers in the process.

Also consider possible stakeholders who you can actively include in your renewal process.



4. CERTIFICATION FOR ONBOARDING PARTNERS

One main aspect of the onboarding initiative of Catena-X is the setup of a skill development program that enables, firstly, a certain knowledge transfer to future Catena-X advisors and, secondly, a high level of quality in the provided service. This skill development program is based on training concepts and materials that have been developed in accordance with this manual. Aim of the certification process is to prove that the onboarding partner has the relevant qualification for successful onboarding and operation of the information exchange with the Catena-X network. However, the described certification process is still under development with some first insights into the requirements and expected skills.

The onboarding of SMEs with a partner environment requires the right skills, industry knowledge and needs to fit the partners' specifications. Via the internet questionnaire we will determine potential partners that could assist the SMEs to receive added value from the Catena-X platform as expected. Please consult the Catena-X website for the latest available information and tools.

The following matrix defines a possible partner qualification process. The following 3D diagram highlights the different requirements that could be considered before a certification process can start.

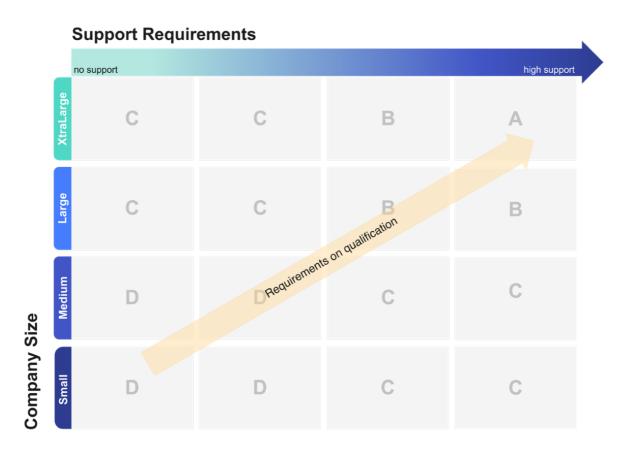


Figure 5: Required Qualifications Effort



As illustrated above (Figure 5: Required Qualifications Effort), the required qualification for a successful advisor depends on the company size as such. Firstly, the size of the SME and that of the advising partner need to be compatible. This is required to balance the expectation of both parties so that an appropriate budget can be aligned. Secondly, it depends on the identified level of support, which must be evaluated together with the SME.

Both indicators determine a specific profile type that describes the expectation level on the skills of the advisor. The profile definition, i.e., what defines profile A, profile B, etc... might be different for the different company sizes. However, when it comes to SMEs, the following overview sets a possible approach of the requirements on the respective advisory partner.

	SME	Advisory Partner
Profile A (Platinum)	High and complex requirements	High qualification with broad overview of the complete process
Profile B (Gold)	High to medium requirements	Well qualified and understanding the process
Profile C (Silver)	Medium requirements	Qualified to implement and understands the process
Profile D (Basic)	Low to no requirements	Qualified to implement with little process understanding

Table 2: Expectations on Partners

Each profile level requires a set of skills to be available at the advisory partner to satisfy the expectations not only of the SME, but also prerequisites for a successful Catena-X onboarding. The four profiles can be roughly described as following:

Profile A Advisory Partners

Profile A advising partners are highly qualified and have a detailed understanding of each aspect of Catena-X and the complete onboarding process. They have successfully accompanied SMEs of various sizes to onboard successfully and so have the expertise and experience to address high and complex requirements of the clients to be onboarded.

Profile B Advisory Partners

Profile B advising partners are well-qualified and have a good understanding of each aspect of Catena-X and the complete onboarding process. However, they focus mainly on either businesses or technical activities and still have low expertise and experience in the onboarding of SMEs of various sizes. Consequently, they can address high to medium requirements of SMEs.

Profile C Advisory Partners

Profile C advising partners are qualified and understand each aspect of Catena-X and the complete onboarding process. However, they address only either business or technical activities and still have low expertise and experience in the onboarding of SMEs of various sizes. So, they can address medium requirements of SMEs and not all aspects of the Catena-X onboarding process without additional support.



Profile D Advisory Partners

Profile D advising partners are qualified and understand each the general approach of Catena-X and can accompany the complete onboarding process. However, they are not sufficiently skilled to address business or technical activities without additional support. This does not rule out their ability to support the complete onboarding process but rely in such a case on SMEs with low or no requirements, i.e., the SME has already a deep knowledge of what must be done or on support from other advisories with a more detailed expertise on specific onboarding steps.

The categorization of advisory partners depends on their acquired skills and certifications and a mandatory self-assessment that evaluates already available skills and expertise.

4.1 Becoming a Certified Onboarding Partner

The ecosystem will see different kind of onboarding partners that are essential for an effective and value-added onboarding of SMEs:

- 1. Service partners that offer technical components as a service, e.g., the EDC or a digital twin registry, addressing the need of SMEs with limited resources or know-how. They enable SMEs to procure parts of the technical solution externally, potentially also including the operations of the solution. These partners will be mostly assigned and can be mainly found in profile B and profile C partner levels.
- 2. Solution providers that can implement complete use cases end-to-end and are able to identify additional business potential for the SME by generating value from the data that is anyway managed in the context of the Catena-X use cases. These partners will be mostly profile A and sporadically profile B partner levels.
- Advisory partners focusing on onboarding SMEs for individual use cases within the scope of Catena-X. These partners will be mostly found in profile C and profile D partner levels.

In line with the scope of the workstream we will define the structure of the partner ecosystem for the advisory partners only. There are many benefits in becoming an advisory partner for Catena-X:

- Partners can grow their business with existing customers, but also get access to new customers.
- The Catena-X program will support and promote partners for customer engagements.
- Partners can leverage their insights into the Catena-X use cases and technologies for other industries, e.g., through GAIA-X.
- The Catena-X use case owners (OEM Tier-1/Tier-2 Supplier) and the local hubs will actively engage partners in the solution design of use cases.
- Members of the Catena-X partner community will receive early access to non-public material and invitations to dedicated events.

For the four levels, D (Basic), C (Silver), B (Gold), and A (Platinum) the following requirements and metrics apply:

1. Each partner performed the advisory partner self-assessment.



- 2. Partners need to be able to conduct their external communication in English and potentially deliver the onboarding process in additional languages to the SMEs.
- 3. Each partner certifies named trainers that also serve as liaisons to the local hub.
- **4.** Each partner certifies advisors through a train the trainer concept. A named trainer also counts as an advisor.
- **5.** Partners need to participate on the certification process of individual and specific topics.
- **6.** Partners need to participate on a recertification process that includes the training on updated contents for named trainers and advisors.
- 7. Geographic coverage for partners is defined by a country list by the Catena-X association and includes the capability to deliver the onboarding in the respective local language.

The successful accomplishment and those requirements will lead to the achievement of the respective Catena-X Advisory Level A to B. Catena-X will support these achievements and improvement activities by online-tools, information packages, training materials and more. Please consult the Catena-X website for the latest available information.

The achieved advisory profile level will be valid for a period of two years and will then require a recertification. If partners do not meet the respective requirements for the previously achieved level, during the two-yearly recertification process they will be assigned to the appropriate lower level. Partners with their respective level will be listed in a publicly available partner list on the website of the Catena-X association.

4.2 The Concept of the Certification Process

The certification process requires certain skills and knowledge about Catena-X. This expertise can be either already available within the advisory partner company or must be acquired in trainings that are provided by other advisory partners or the Catena-X association.

The objective of this certification process is to ensure a certain level of quality in support and implemented solutions. Therefore, the advisory partners need to have a certain knowledge of what Catena-X is, how it works, what it requires and what a SME can achieve with the implementation. Depending on the region and industry, the advisory partner needs to also demonstrate the required language and industrial knowledge to clearly understand the SME's expectations.

The certification process follows a series of four mandatory steps that must be taken consecutively to evaluate the entrance point into the Catena-X ecosystem.

Step 1 - Registration as Advisory Partner

The Catena-X association and / or an operating company (OpCo) provides an initial registration form for potential advisory partners. First, this registration form starts the certification process by starting the adequate self-assessment procedure.



Step 2 - Self-Assessment as Advisory Partner

Catena-X is built on the principle of a mutual, equal, and trusted collaboration. Therefore, the self-assessment will allow advisory partners to evaluate the right entrance level into the Catena-X Advisory Ecosystem by declaring some of the profile requirements as fulfilled.

Step 3 - Initial Profile Level Assignment

Based on the type of advisor, their capabilities and the conclusions made on basis of the self-assessment, the Catena-X association will assign the initial profile level for the advisor partner. The initial profile level is given temporarily and might come with additional requirements that need to be fulfilled.

Step 4 - Name Trainers and Complete Level Requirements

The initial profile level assignment comes with certain requirements or inter alia, the number of trainers (see Table 3: Requirements Profile Level). The advisor partner must name them and complete the level requirements to confirm the given temporary profile level.

Improving and maintaining the profile level

The achieved level is valid for a fixed period only. Within this period, trainings and re-certifications must be performed. This can be done by certified trainers by inhouse training or by external trainings and support. The same conditions apply also for the improvement of the profile level.

Valid means of training methods are but not limited to online trainings, classroom trainings and self-learning courses. The successful accomplishment of each course method must be documented and verified. For the latter one, all formats like participation, multiple choice, online, offline, verbal, or written exams are accepted if they are adequate and feasible. The Catena-X association can come up with specific requirements for certain qualification modules that are considered as mandatory and/or important. Please consult the website of the Catena-X association for more information and the latest applicable certification regulation.

As the Catena-X ecosystems develops, the capabilities of advisory partners and their advisor qualifications need to be continuously developed.



4.3 The Preliminary Certification Criteria

The certification criteria for each advisory profile level comes with a set of quantifiable requirements or inter alia, the number of trainers, advisors and successful onboardings but also on qualitative requirements like the successful accomplishment of Catena-X modules. Catena-X modules are aligned with the onboarding process (see 3.1 How, why, and what) and can contain one or more mandatory courses or records of achievement. An overview and the latest list of available modules and their mandatory courses can be found on the website of the Catena-X association.

Profile Level		D (Basic)	C (Silver)	B (Gold)	A (Platinum)
Named trainer		1	1	2	5
Advisors		1	2	5	10
Catena-X modules		2	6	10	16
Country	large	1 or	1 or	1	2
	medium	1 or	1 or	1	2
	small	1 or	2	1	3
# of successful onboardings		n/a	5	20	50

Table 3: Requirements Profile Level

The current requirements for a successful certification are:

Named Trainers

Named trainers are individuals employed or are contracted by the onboarding partner who can deliver courses on the Catena-X modules for advisors and assess exams that will be accepted as records of achievement. Special conditions apply for trainers.

Advisors

Advisors are individuals employed or contracted by the onboarding partner who have accomplished successfully at least one Catena-X training module.

Catena-X Modules

The Catena-X Modules cover all aspects of Catena-X and the onboarding process on qualitative level. Please consult the website of the Catena-X association for an overview of all current modules, their content, as well as courses. One module can consist of one or more mandatory or voluntary courses. They cover the Catena-X ecosystem but also GAIA-X / IDSA technology and architecture.

Countries

Countries and their respective languages that are covered and addressed by the advisory partner.

- Successful Onboardings

Number of onboardings that have been successfully accompanied and completed. This does not carry the requirement to have covered all aspects of the onboarding process.



The certificate processes are based on several phases from a basic level to complete training on all Catena-X packages / solutions. The training will cover not only the Collaborative Data Ecosystem but also the GAIA-X / IDSA Technology and Architecture.

Please consult the website of the Catena-X association of the latest requirements for each profile level.

4.4 Scaling the Advisory Ecosystem

A high number of highly qualified advisors is key when it comes to the successful onboarding of SMEs. Therefore, the Catena-X association supports the "train-the-trainer" concept with training material and documents like this one. Once having achieved the named trainer status, advisory partners can train, not only their own advisors but also third parties who want or plan to get involved with the Catena-X ecosystem.

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5.2 List of Associated Annexes

Annex I - Glossary and Definitions (work in progress)

Annex II - List of Existing Training and Information Material (work in progress)

Annex III - List of Available Use Cases (work in progress)

Annex IV - Onboarding FAQs (work in progress)

Annex V - Self-Assessment Questionnaire for SMEs (work in progress)

Annex VI - Self-Assessment Questionnaire for Advisory Partners (work in progress)

Annex VII - Training Package "Get involved" (work in progress)

Annex VIII - Training Package "Get connected" (work in progress)

Annex IX - Training Package "Stay Tuned" (work in progress)



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