

DIGICOR: Decentralised Agile Coordination Across Supply Networks



WP2: Community, Use Cases and Continuous Validation

D2.5: Community Use Cases Definition Report

Deliverable Lead: HAW

Main Editor: Ingo Martens, HAW

Contributing Partners: AGI, C2K, CER, COMAU, HAW, SGL, ICE, ALM,
UNIMAN, CTU, FOR

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Short Abstract

This document includes the description of the DIGICOR community use cases.



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Further Information

www.digicor-project.eu

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Project Partners:

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Singular Logic



Executive Summary

The following document contains the description of the community use cases of the DIGICOR project.

In the DIGICOR project four internal use cases are planned for the evaluation of DIGICOR technologies for the collaboration of suppliers in the value chain of large OEM. Beside those internal use cases three more, external use cases of interest were identified while discussions with the DIGICOR supplier community:

- Capacity sharing: An external company has free production capacities (e.g. for 3D-printing) and offers these capacities to the platform. All companies or collaborations as virtual enterprises (VE) can use the free capacities for their own production.
- Logistics service provider: A SME uses an external logistics service provider for packaging and transport of products. The service provider needs an app for tracking and tracing the transport. A developer creates an app that fulfils the requirements.
- Finding new market opportunities: A company is currently producing components (small springs) for an automotive supply at the Tier 3 level and is afraid that they will lose their market as other competitors are entering the market and wants to diversify into another sector, provide springs for hair clips for example and needs support to enter this new market.

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1 INTRODUCTION

1.1 THE DIGICOR PROJECT

DIGICOR (Decentralised Agile Coordination Across Supply Chains) is a collaborative project within the European Commission (EC) “Factory of the Future” initiative and is funded under the H2020 Framework Programme.

The DIGICOR project will provide an open platform, tools and services that allow European companies to create and operate collaborative networks across the value chain. The project will develop novel collaboration and management concepts and implement a collaboration platform and related tools for setup and coordination of collaboration networks. In particular the project addresses integration of non-traditional, small but innovative companies or service providers into the complex supply chain of large OEMs. The project will significantly reduce the burden to setup production networks and collaboration between SMEs, will shorten the time to jointly respond to business opportunities and to enter supply chains of large manufacturers and will simplify management and control of production and logistics execution.

1.2 DELIVERABLE PURPOSE AND SCOPE

The purpose of this document “D2.5” is to define the relevant community use cases for the DIGICOR-platform. The following aspects were investigated:

- general community use cases with external partners
- special community use cases in the aviation industry
- special community use cases in the automotive industry

The results for these investigations are documented in the next sections.

1.3 TARGET AUDIENCE

The document aims primarily at project participants and the European Commission (including appointed independent experts) with an overview of the community use cases in production networks, which could be filled by the DIGICOR-platform. Furthermore, this document will be published to inform members of the community about their possibilities to engage in the project and to test the platform later.

1.4 DELIVERABLE CONTEXT

This document is a result of the task T2.2: Use Case Definition. The findings are necessary for the development of communities in the aviation industry and automotive industry.

1.5 DOCUMENT STRUCTURE

This deliverable is broken down into the following sections:

- **Section 1:** Introduction: An introduction to this deliverable
- **Section 2:** Community Use Cases
- Annexes:
 - Annex A: History
 - Annex B: Abbreviations

1.6 DOCUMENT STATUS

This document is listed in the Description of Action as “public” since it provides information for interested project partners and users of the DIGICOR-platform.

1.7 DOCUMENT DEPENDENCIES

This document refers to the end-user requirements described in D1.5 and the definition of use cases described in D2.4.

1.8 GLOSSARY AND ABBREVIATIONS

A definition of common terms and a list of abbreviations is documented in Annex B: Abbreviations, p. 16.

1.9 EXTERNAL ANNEXES AND SUPPORTING DOCUMENTS

There are no external annexes or other documents.

2 COLLABORATION WITH THE DIGICOR PLATFORM

To bring companies together for a collaboration is a challenge. In most cases the first step is to find possible partners for production of complex products in a production network. After establishing a collaboration, the partners have to exchange data and information for a successful cooperation. In general, the supply chain is in focus of a collaboration management.

Against this background it is necessary to define use cases for the DIGICOR platform. General use cases are deducted from the processes investigated in the gap analysis of this project (D1.1 "Gap Analysis Report"). According to that the DIGICOR platform shall support different use cases in 3 phases:

- Phase 1: Procurement
- Phase 2: Engineering and Development
- Phase 3: Manufacturing

The main focus for the internal use cases is on these 3 phases as shown in Figure 1. The delivery is considered partially because sometimes it is integrated in manufacturing processes.

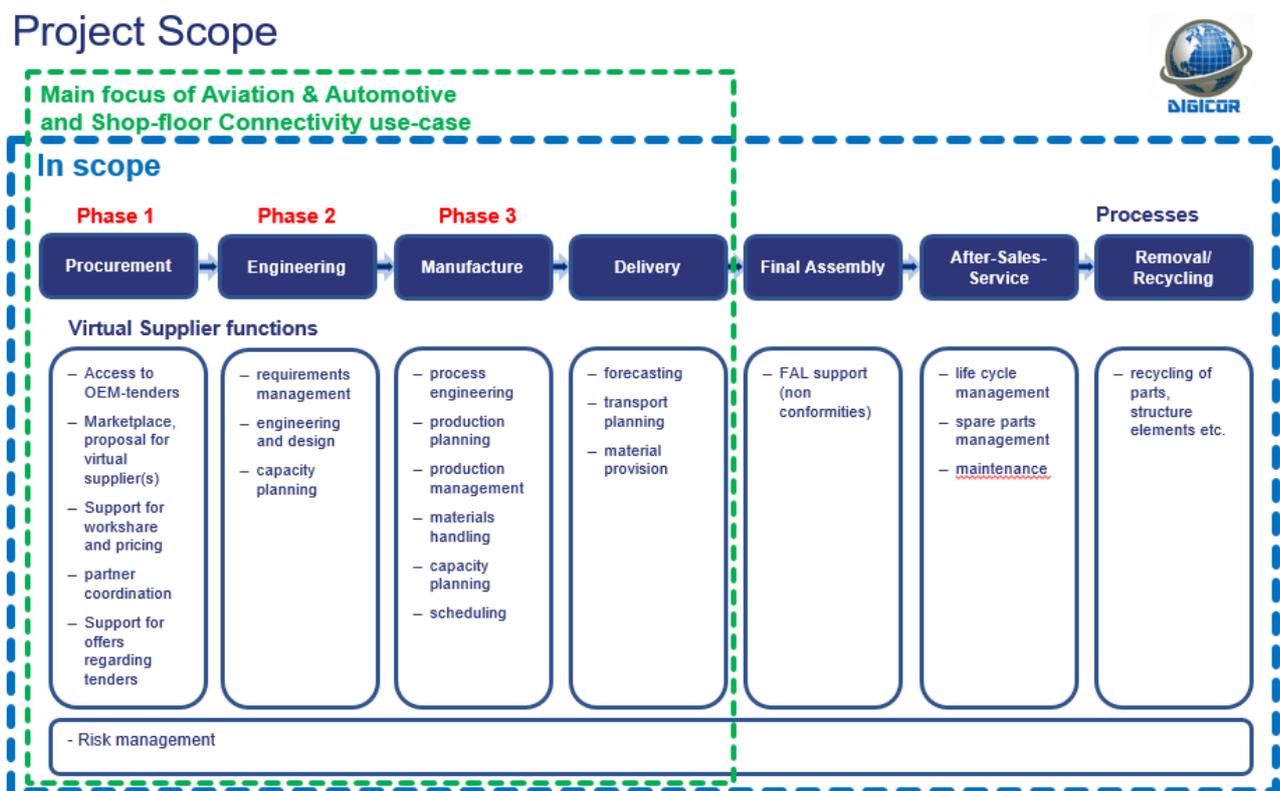


Figure 1: Process Steps for Manufacturing Businesses

The phases shown in Figure 1 are broken down into three individual internal cases from Airbus / Hanse Aerospace, Control 2K – representing the Welsh Cluster which is primarily dominated by the Automotive industry –, and Comau, a use case which is essentially absorbed across these two key cases.

The aerospace and automotive use cases differ in their approach to providing services to their community members. The different use cases are described in Table 1.

UC-ID	UC Name	UC Description
UC-1	Operate DIGICOR platform	Operation the DIGICOR platform, member management, etc.
UC-1.1	Host the DIGICOR platform	Service provider hosts the technical platform, updates and adds / removes tools
UC-1.2	Add / remove tools	Tool provider add tools to the DIGICOR platform (Apps in the Tool store)
UC-1.3	Operate platform	Platform operator (e.g. cluster manager) administrates the platform, manages membership and functionalities
UC-1.4	Start membership	Supplier applies for the DIGICOR platform membership and creates an account
UC-1.5	Update account	Member of the platform updates the account information, users and privileges or terminates membership
UC-2	Offer	OEM call for tender and supplier offer creation and submission, OEM offer selection and contracting
UC-2.1	Request for tenders	OEM publishes a call for tenders and will select out of the offers the supplier for contracting
UC-2.2	Search for opportunities	Supplier searches for call for tenders of interest and will prepare an offer
UC-2.3	Manage collaboration	In case of collaborative offer the supplier manages the partners and joint offer preparation.
UC-3	Develop/Collaborate	Supplier develops the product as contracted by OEM
UC-3.1	Development product	Supplier develops the contracted product including planning of the development, execution of the development tasks and in case of collaborative development the management of the collaboration. The risk management can extend the execution.
UC-3.2	Manage supplier	The OEM engineering is monitoring the supplier's development processes and review the results
UC-4	Fulfil/Manufacture	Supplier manufactures the product as developed and ordered by the OEM
UC-4.1	Fulfil order	Supplier produces the ordered shipset including the planning of the production, possible risk mitigation (risk assessment, rescheduling and real-time monitoring) and collaboration management in case of joint production
UC-4.2	Create order	The OEM procurement and production provides forecast information and finally creates orders for the shipset to the supplier and reviews the delivery process

Table 1: DIGICOR top-level use cases (internal)

All use cases are described in detail in D2.4 "Internal Use Case Definitions".

For the community outside the platform, other use cases could be relevant. The DIGICOR platform should allow external companies or service providers to take part in platform collaborations in an easy way. That's why some further use cases have to be developed.

The consortium discussed three use cases:

- Community Use Case 1: Capacity Sharing
- Community Use Case 2: Integration of external service providers
- Community Use Case 3: Finding new markets in new sectors

These three use cases are described in the following.

3 COMMUNITY USE CASES (CUC)

3.1 COMMUNITY USE CASE CUC-1: CAPACITY SHARING

1 Brief Description		
An external company has free production capacities (e.g. for 3D-printing) and offers these capacities to the platform. All companies or collaborations as virtual enterprises (VE) can use the free capacities for their own production.		
2 Actors		
	Name	Description
2.1	Provider	a company that offers free production capacities to the platform
2.2	Supplier	a company or a VE in the platform, which uses external capacities
3 Preconditions		
<ol style="list-style-type: none"> 1. Supplier is a registered member of the cluster specific platform 2. Platform architecture allows offers in a public area in the marketplace 3. General standards and requirements are defined and communicated to Providers 4. General agreements about licensing, contracts and payments (between Provider and Supplier) are in place 		
4 Basic Flow of Events		
<ol style="list-style-type: none"> 1. Provider connects to the open space of the platform and places an offer for free capacities 2. Supplier searches for free capacities and finds offer 3. Platform provides standard contracts for using external capacities 4. Provider and Supplier sign a contract 5. Supplier uses external capacities 6. Provider monitors the production progress for the Supplier 		
5 Alternative Flows		
None		
6 Key Scenarios		
6.1	Create an offer in the marketplace of the platform.	
6.2	Supplier finds open offers.	
6.3	Provider and Supplier sign a contract.	
6.4	Provider monitors the production progress and provides this information to the supplier via the platform.	
7 Post-conditions		
7.1	Successful completion of production.	
8 Special Requirements		
The contractual aspects of involving third parties concerning access to documentation, information and tools are defined. The standards and requirements that the tools must meet are defined.		

3.2 COMMUNITY USE CASE CUC-2: INTEGRATION OF A LOGISTICS PROVIDER

1 Brief Description									
A SME uses an external logistics service provider for packaging and transport of products. The service provider needs an app for tracking and tracing the transport. A developer creates an app that fulfils the requirements.									
2 Actors									
	<table border="1"> <thead> <tr> <th>Name</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>2.1 TP</td> <td>Tool Provider – a company that is developing applications / tools for the platform</td> </tr> <tr> <td>2.2 Supplier</td> <td>a company or a VE in the platform, which uses external capacities</td> </tr> <tr> <td>2.3 SP</td> <td>Service Provider – a company that offers services for the platform</td> </tr> </tbody> </table>	Name	Description	2.1 TP	Tool Provider – a company that is developing applications / tools for the platform	2.2 Supplier	a company or a VE in the platform, which uses external capacities	2.3 SP	Service Provider – a company that offers services for the platform
Name	Description								
2.1 TP	Tool Provider – a company that is developing applications / tools for the platform								
2.2 Supplier	a company or a VE in the platform, which uses external capacities								
2.3 SP	Service Provider – a company that offers services for the platform								
3 Preconditions									
<ol style="list-style-type: none"> 1. Tool provider is a registered member of the cluster specific platform 2. Supplier is a registered member of the cluster specific platform 3. Platform architecture allows extensions and is documented such that third parties are able to develop extensions 4. General standards and requirements are defined and communicated to provider 5. Tool test environment is in place and available for the tool provider 6. Agreements about licensing, contracts and payments (between TP and SP) are in place 									
4 Basic Flow of Events									
<ol style="list-style-type: none"> 1. Supplier grants TP access to the test environment (depends on if there is a specific test environment per cluster) for developing a tool for tracking and tracing. 2. Tool provider (internally) develops a new tool against required specifications and standards. 3. Tool provider runs tool in test environment. 4. Tool provider asks for permission to release. 5. Supplier checks tool against requirements and gives permission for release. 6. TP adds tool to tool store. 7. Supplier grants SP access to the new tool. 8. SP uses the new tool for his service for Supplier. 									
5 Alternative Flows									
None									
6 Key Scenarios									
6.1	Implementing a new tool is initialized, confirmed and conducted.								
6.2	Implementing a new tool is initialized but does not get the permission to be released.								
6.3	Deleting a tool is initialized, confirmed and conducted.								
6.4	Deleting a tool is initialized but an issue cannot be resolved and deletion is cancelled.								
7 Post-conditions									
7.1	Successful completion of adding the tool								

	The new tool is available in the tool store and can be bought and used by other platform members.
7.2	Failure of Adding Elements of the tool store are unchanged.
7.3	Successful completion of deleting A tool has been removed from the tool store and thereby is not accessible for other members of the platform anymore.
7.4	Failure of deleting Elements of the tool store are unchanged.
8 Special Requirements	
The contractual aspects of involving third parties in developing tools concerning access to documentation, test environment and licensing are defined. The standards and requirements that the tools must meet are defined.	

3.3 COMMUNITY USE CASE CUC-3: FINDING NEW MARKETS IN NEW SECTORS

1 Brief Description		
A company is currently producing components (small springs) for an automotive supply at the Tier 3 level and is afraid that they will lose their market as other competitors are entering the market and wants to diversify into another sector, provide springs for hair clips for example and needs support to enter this new market.		
2 Actors		
	Name	Description
2.1	Facilitator	a company that is aware of new opportunities and new markets,
2.2	Supplier	a company or a VE in the platform, who provides their detailed profile and capabilities that can be searched and matched to a wider audience.
3 Preconditions		
<ol style="list-style-type: none"> 1. Supplier is a registered member of the cluster specific platform 2. Supplier has provided a detailed profile 3. Facilitator has access to new opportunities outside of current domain 4. General agreements about licensing, contracts and payments (between Offeror and Supplier) are in place 		
4 Basic Flow of Events		
<ol style="list-style-type: none"> 1. Facilitator places an offer for new domain opportunity 2. Platform matches Facilitator opportunity with Supplier profiles with a broader look at processes that could be implemented on current infrastructure of supplier 3. Platform returns the names of Suppliers that could adjust their infrastructure at minimal cost to provide new market 4. Facilitator contacts Supplier and negotiates fees for finding opportunity 5. Supplier contracts with new customer 		
5 Alternative Flows		
None		
6 Key Scenarios		
6.1	Facilitator creates an offer on the marketplace of the platform.	
6.2	Supplier receives potential new opportunities.	
6.3	Supplier pays Facilitator for finding new Customer	
6.4	Supplier signs contract with new Customer	
7 Post-conditions		
7.1	Customer finds a new market	
8 Special Requirements		
Step by step process needed to guide both Facilitator to advertise new opportunity and Supplier to be guided to provide the required paperwork for new Customer.		

4 ANNEX

4.1 ANNEX A: DOCUMENT HISTORY

Version	Date	Changes
A01	17 th July 17	first draft
A02	18 th September 17	final draft
A03	28 th September 17	Amended final draft

4.2 ANNEX B: ABBREVIATIONS

Abbreviation	Meaning
CB	Condition Based
CBM	Condition Based Maintenance
CUC	Community Use Case
ERP	Enterprise Resource Planning
JIT	Just in Time
KPI	Key Performance Indicator
MTBF	Mean Time Between Failures
OEM	Original Equipment Manufacturer
PM	Project Management
SAP	Systeme, Anwendungen, Produkte in der Datenverarbeitung
SME	Small & Medium Enterprise
UC	Use Case
UML	Unified Modelling Language



DIGICOR