



BalticLSC Knowledge Transfer Guides

Materials and future recommendations
Version 1.0



Priority 1: Innovation

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BalticLSC Knowledge Transfer Guides

Materials and future recommendations

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Executive summary

This guide concerns the knowledge transfer in regards to the different stakeholders and users of BalticLSC Environment. It specifies the target groups and different means to communicate and transfer knowledge to each of the target groups. The guide refers to many existing tools on the BalticLSC website and includes other materials used during the knowledge transfer process.

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1. Introduction

1.1 Objectives

The knowledge transfer strategy reflects ways to activate the Baltic LSC beyond the partner group. It defines the target groups for the knowledge transfer activities and what tools to choose when sharing knowledge about the Baltic LSC. Furthermore, the strategy lays out a plan for teaching the target groups how to use the Baltic LSC network and includes guides for the activities.

The purpose of having a knowledge transfer strategy and guides for the knowledge transfer activities is to secure that the intended users of the Baltic LSC network will get an adequate introduction to the usage of the network. In addition, the knowledge transfer strategy is closely connected to the communication strategy, as raising awareness of the Baltic LSC is a prerequisite of attracting users to the Baltic LSC network and thus, participants to the knowledge transfer activities e.g. local training workshops.

The knowledge transfer strategy is effectively a compilation of methods and tools that have been developed and used within the project.

1.2 Scope

The knowledge transfer strategy and activity guides are meant to streamline the teaching and outreach activities performed by the Baltic LSC team. As such, it is a mean to secure a planned effort to educate end-users, service providers etc. in using the network and an assurance of uniform quality in the activities.

1.3 Relations to Other Documents

The knowledge transfer strategy has gained insights into knowledge transfer wishes from the market demand for Baltic LSC services report. The report states that 44.4 percent of SMEs would like to attend in a technical workshop, 55.6 percent would like to attend in a free high-level introductory event to Baltic LSC and be informed on relevant local LSC training courses.

Also, a collaboration with the Baltic LSC on a pilot development & demonstration project and participation in a follow-up interview are expected by 33.3 percent and 16.7 percent, respectively.

This is useful information when designing the knowledge transfer activities and planning for our workshops/events. However, it should be noticed that there has not been that many respondents to the survey and thus, we might only have answers from a small very interested group.

The knowledge transfer strategy is also closely related to the Baltic LSC Handbook (O6.3). The handbook is a documentation and instruction on how the solution works and is thus a central reference document.

1.4 Intended Audience

The knowledge transfer strategy and activity guides are meant to streamline the teaching and outreach activities performed by the Baltic LSC team. It describes and orchestrates all available resources as per different stakeholders. As such the audience of the tools are all user-groups and stakeholders, whereas the audience of this report is also promoters of Baltic LSC.

2. Target Groups and their Knowledge Needs

2.1 Target groups of Baltic LSC

There are different relevant target groups for Baltic LSC but mainly end-users, service suppliers and internal Q&M team:

The **end-users** can be defined as those entities that are using the infrastructure to process large amounts of data. The presumed end-user of Baltic LSC has a need for fast and massive data processing and has some capacity in terms of software development skills. The end-user is also motivated by the collaborative nature of the Baltic LSC Environment and its cost-efficiency compared to other available solutions. End-users of Baltic LSC can both be SMEs, start-ups, university departments or public institutions/ administrations with a need for large scale computing. Because of this wide scope of potential end-users, it is important to understand the different types of end-users with regard to their needs and pre-existing skills level with regards to building applications on their own or needing this level of service. This continues to be an attention point in all knowledge transfer activities towards this target group.

The **service suppliers** can be defined as those entities who deliver either infrastructure (processing capacity) and/ or services related to the data processing, i.e. application development. Just as in the case of end-users there is a wide scope of potential service suppliers, ranging from private companies, datacenters to universities and software developers. In some respects the application developers could themselves also be end-users. This target group is very important especially to grow the Environment and accelerate the number of application uses. Growing the Environment and possibility of more customized applications increases the usability of the Environment and attracts end-users.

The **O&M** can be defined as those promoting and running the Environment. This is IT personnel interested in providing BalticLSC services and with an interest to set up their own versions of BalticLSC or to join the existing networks. This group is much wider than the current consortium that drives the Baltic LSC onwards from January 2022 but can be expected to include universities, RTOs and specialized private companies.

2.2 Different Knowledge Needs

As presented in the previous section, there are different target groups of the Baltic LSC Environment and solutions. Subsequently, there are different knowledge needs that must be addressed in the tools and activities.

Potential **end-users** have different knowledge needs, but generally they should be made aware of the opportunity, understand the value proposition of the Environment and be able to make a qualified decision to engage through deeper hands-on trial.

Firstly, they need to become aware of the possibility and inform themselves on both the use of large scale computing as well as the working of Baltic LSC set-up. Large scale computing is related to other digital developments like big data and machine learning but is also specifically concerned about processing of data sets. For example it is not designed to process real-time data. End users need to understand the actual scope of large scale computing and how it relates to other fields of digital processes. Secondly, end-users need a concrete evaluation of their need towards the functioning of the system to finally be able to decide how it applies to their defined need. This is made possible through both self-directed and facilitated hands-on trial of the system.

Potential **service suppliers** have different knowledge needs: Firstly, they need to become aware of the technical set-up as for compatibility and responsibilities. This requires accessible documentation and availability of support to confirm this. Secondly, they need to understand the entailed platform approach and entailed business model(s). As stated above, the service suppliers for processing capacity/ infrastructure will especially need to understand the infrastructural set-up. The suppliers of application development will much more need to understand the front-end of the system and how they can potentially create value from it.

Overall, service suppliers need to be able to assess how they can use the Baltic LSC and be able to make decisions through hands-on trial.

Potential **O&M** (Operation and maintenance) team and Environment promoters need adequate technical information to be able to operate the Baltic LSC.

The knowledge need of this type of stakeholder can be difficult to standardize. As a minimum they need adequate technical information to be able to operate the Baltic LSC but also direct opportunity to learn and spar with the existing expertise.

In order to cater to the various knowledge needs of the target groups, different guides, tools and knowledge transfer activities have been developed as it is the goal to create awareness of the possibilities but also to engage actively with different stakeholders.

3. Tools and Activities

The knowledge transfer activities include a range of different training and learning methods as well as community building. This ensures that all target groups' needs are met and that they can choose their preferred training method in order to be able to use the Baltic LSC.

Most of the resources are made available on the webpage accessible here: <https://www.balticlsc.eu/>

In the webpage there is a section dedicated to the demonstration of the solution ("Demo"), a section called Surveys is available for users/ stakeholders to assess their participation, and in Documentation section the technical documentation of the solutions is available. From the webpage it is further possible to get a list of direct contacts.

In the following, the different knowledge transfer activities are described including the guide on its usage.

3.1 Introduction Videos

What: Two introductory videos from 2020 and 2021 respectively, present the Baltic LSC Environment, the central ideas and value proposition. The recent video from 2021 provides over 11 minutes this introduction utilizing graphical slides. The video addresses the end-user and shows the pathway from an idea/ need to a service/ solution using the Baltic LSC. It also explains the infrastructure and business model of the Environment. The introductory video from 2020 presents more project specific detail like the partners behind the Environment. Thus the two videos are complementary and the 2021 version reflects the year difference of development.

Target group: The introduction video works as a mean of information and introduction to potential end-users and service providers as well.

Guide/ feedback: The Baltic LSC project partners may use it for distribution to interested parties as well as an introduction tool in bilateral meetings with potential pilot companies and end-users in general. The latest video was uploaded in summer of 2021 and currently has less than 100 views whereas the introduction video from 2020 has around 200 views currently. The previous version of the introduction video gathered also almost 200 views before being replaced by the newer version.

Access: The introduction videos are accessible via the project's youtube channel along with other project videos here: <https://www.youtube.com/channel/UCGA3JIeSyXN45ufKygvrHHA>

3.2 Demo Tutorial Video

What: A demo tutorial video was produced in order to introduce the functionalities of the Baltic LSC and in over 13 minutes it walks a use case of the system. The demo shows the potential of the Baltic LSC and how easy it is to use; however, it also introduces the limitations of the Baltic LSC and this helps SMEs and start-up companies to decide whether they can make use of the Environment. The demo video encourages users to get in contact with the Baltic LSC program and points to both workshops and the pilot program.

Target group: The demo video works as a mean of information and introduction to potential end-users and service providers as well.

Guide/ feedback: The Baltic LSC project partners may use it for distribution to interested parties as well as an introduction tool in bilateral meetings with potential pilot companies and end-users in general. The demo tutorial video was uploaded in 2021 and has more than 150 views currently.

Access: The demo video is accessible via the webpage here: <https://www.balticlsc.eu/balticlsc-demo/>

3.3 Security Video

What: A security video was produced in order to explain the security level of the Baltic LSC and over 5 minutes it walks through the security aspects. This includes walking through the chosen solutions and providers and making explicit the security design through principles of e.g. containerization, separation of computation applications, communication protocols et.al.

Target group: The security video is aiming all target groups, including all end-users and service providers whether infrastructure partners or application developers.

Guide/ feedback: The Baltic LSC project partners may use it for distribution to interested parties as well as an introduction tool in bilateral meetings with potential pilot companies and end-users in general. The security video was uploaded in 2021 and has less than 50 views currently.

Access: The demo video is accessible via the webpage here: <https://www.balticlsc.eu/balticlsc-demo/>

3.4 Presentations

What: Four presentations including technical and non-technical focus have been prepared to support the introduction and explanation of Baltic LSC. The presentations can support meetings and inspire further development/ customization. The two presentations will serve as the introduction of the Baltic LSC network in the training seminars/local workshops and thus, they are an important part of the educational tools.

Target group: In combination the power points target both end-users and service providers.

Guide/ Feedback: The presentations can be used in local workshops and/ or in meetings with potential end-users or service providers. For training purposes, it is recommended that the presentations should be the starting point for the introduction of the Baltic LSC functionalities and a “how to guide”. It is however advisable to customize and to add more and new examples of uses depending on the audience. Especially the type of data processing and where it ideally applies as well as the scope of large scale computing (as different from other such as AI, machine learning etc.) is important to address also.

Access: The presentations are all publicly available and can be accessed at: [balticlsc/Documents: BalticLSC Documentation and Training Materials \(github.com\)](https://github.com/balticlsc/Documents/BalticLSC_Documentation_and_Training_Materials)

3.5 Baltic LSC Handbook

What: The BalticLSC Handbook was prepared following and in accordance with all the design and implementation activities. It is a comprehensive and complete guide to the BalticLSC Environment. Specifically, the handbook provides guidance on how to start a BalticLSC node (technically) and how to start using the BalticLSCsystem for computations.

Target group: The handbook is intended for the end-users of the LSC system, the technical partners and O&M.

Guide/ Feedback: The handbook can be used as a manual for the interested service providers, the operations & maintenance team of the Baltic LSC and/or a potential user of the Environment. The handbook will be a living document – almost like a wiki – and it is updated continuously. The use of the handbook has shown that for easier learning example code and Computation Modules templates are required. Such templates in different programming languages have been provided in a public code repository together with the Handbook.

Access: The handbook is available as a project output on the webpage here: <https://www.balticlsc.eu/downloads/project-outputs/> and here: [balticlsc/Documents: BalticLSC Documentation and Training Materials \(github.com\)](#). The example code templates are available at: [Baltic Large Scale Computing · GitHub](#)

3.6 Local Workshops

What: A central part of the knowledge transfer strategy is the training seminars/local workshops where group of potential end-users and/ or service providers are assembled. Their purpose is threefold:

A) Hands-on experience with the Baltic LSC network – learning by doing. One of the big advantages of this form of training is that you are in the same room as the “teacher”/instructor and you can get direct response on your questions and solve challenges together two and two or in groups.

B) Community building end-users and service providers as well as Baltic LSC team. When you organize local workshops/training seminars, you bring together different people from different companies and institutions who may learn from each other and see potential for cooperation in the future – that is you start building a community around the Baltic LSC. This is of great value for the “afterlife” of the Baltic LSC.

C) Feedback loop into the Baltic LSC network providing both potential new pilot cooperation as well as input to new requirements to the network (technical and services). This is a positive side effect of local training seminars that the Baltic LSC can get direct feedback from the users and optimize the network based on this information. Furthermore, some companies might be interested in being pilots in the Baltic LSC project and help define the needed functions for them to be able to use the network. At the workshop different representatives from the Baltic LSC can be present, including technical expertise and business support expertise to guide the workshop.

Target group: The local workshops are held for potential end-users and service providers.

Guide/ Feedback: A local workshop format can differ. During covid-19 there has been experience of virtual events and hybrid events where some are present together and others participate by video. Ideally it should be a small group of end-users for as much hands-on and direct interaction as possible. Each local training seminar begins by introducing the Baltic LSC with the official presentation and then the stepwise guide/how to use the Baltic LSC presentations with the possibility to raise questions during the introduction. Following this training session, the participants will have some time to get hands-on experience with the network together with the other participants and the instructor. The participants will be asked to answer a questionnaire at the end of the training session to be able to gather input on improvement of the Baltic LSC and the needed additional functionalities. Last, the participants will get time for networking and being acquainted with each other.

Based on the experience so far, the concept works best in small groups and with physical presence and demonstration.

Access: The presentations used at the workshop are all publicly available and can be accessed at: [balticlsc/Documents: BalticLSC Documentation and Training Materials \(github.com\)](https://github.com/BalticLSC/Documentation-and-Training-Materials)

3.7 One-on-one Workshops

What: Especially during the pandemic, some bigger companies or organizations require more direct approach. Workshops performed just with one organization by a single partner were a part of both knowledge transfer activities and technical feedback gathering. The partner gives an introduction presentation, if it is required (in many cases the participants already knew about BalticLSC from broader presentations e.g. at a bigger conference). Later the BalticLSC is discussed with the focus on the area the participant is interested in.

Target Group: The one-on-one workshops are organized for interested potential service suppliers.

Guide/ Feedback: This form of workshops started during the Covid-19 pandemic to contact parties not interested in participating in bigger workshops. Such workshops resulted in much higher involvement of the participant and were able to reach potential suppliers of computation power and/or computations applications.

Access: The presentations used at the workshop are all publicly available and can be accessed at: [balticlsc/Documents: BalticLSC Documentation and Training Materials \(github.com\)](https://github.com/BalticLSC/Documentation-and-Training-Materials)

3.8 Pilot Demonstration and Collaboration

What: The pilot cooperation is both part of the technical development of the Baltic LSC Environment (acting as test cases) and the knowledge transfer activities as it serves as a feedback loop attracting companies to the project and providing them with services and knowledge about the network. The pilot companies can act as ambassadors attracting more companies (end-users & service providers) and give feedback to the technical team about functionalities and potential improvements. A template to describe the pilot has been developed.

Target Group: The target group for pilot demonstration and –collaboration are potential end-users and service providers.

Guide/ Feedback: To establish the pilot cooperation each project partner needs to contact relevant companies and share the demo video on social media, webpages etc. The recruitment of good pilot collaborations can likely happen at the local workshops where the compatibility of the user need can be initially assessed. When a company has agreed to be a pilot, the project partner who has the primary contact to the company stays the primary contact throughout the project period and coordinates the cooperation with the technical partners. The feedback on functions and potential improvements to the Baltic LSC is given either directly to the technical partners when developing the app relevant to the pilot or when answering a questionnaire designed for the evaluation of the Baltic LSC as the final activity of a local workshop/training session.

Based on the current experience the number of pilots are not illustrative of the Baltic LSC capability. Delays of the activities (covid-19) is partly the reason, but also matching the right user challenges with the Environment has proven challenging until now. The use of pilot cases remains relevant though and will be possible as the pilot cases are described.

4. Knowledge Transfer Activity Summary

4.1 Activities carried out

At the time of writing, the project is coming to an end and knowledge activities have been carried out. Generally speaking the outreach to companies and especially engagement through workshops leading into pilot collaborations have been challenged greatly by Covid-19 which slowed down activities and inhibited physical workshops for long periods of time in the project period.

However, despite the delay and somewhat lighter formats there has been several activities carried out to create awareness and engage the target audiences. The local workshops that have been carried out are:

- Attending 17 events (both national and international) with information or presentations about Baltic LSC
- Local workshops in Vilnius, Vejle and Turku have taken place in the summer and autumn 2021.
- 2 international online workshops and multiple online one-on-one workshops
- Total of 20 workshops organized during the project
- Pilot screenings of over 30 end-users have taken place resulting in 8 fully active pilot collaborations.

4.2 Learnings

The learnings from the knowledge transfer activities have been:

- Shorter presentations to keep the audience engaged. (This has been addressed with the different presentation versions)
- Different presentation versions for technical and nontechnical people (This has been addressed in both the video material as well as the presentation versions)
- Connecting the BalticLSC workshops with other bigger events to attract more participants (used since the end of period 5)
- Individual workshops/ meetings/ interviews with interested participants after workshops/presentations instead of general surveys (Implemented during the last year of the project - resulting in better feedback)
- Easy to follow example prepared on the Demo Version of the BalticLSC Environment so participants can also do it in real time on their own (This has been implemented in the Demo Tutorial video)
- Example applications with easy to see and understand results even for non technical people (For us image processing worked the best)