



LOPEC interim results

interim result 1: LOPEC Learning Environment and Learning Content

The educational goal system of LOPEC is based on the fundamental mind of Lean Management and Operational Excellence, with the essential objective on customer focus. The grey-collar worker will be qualified to identify and to reduce waste sustainably until perfection. Parallel, he or she has to be versed in additional disciplines and tools so that optimization tasks in regards of Lean Logistics can be developed, implemented and evaluated (Figure: LOPEC Learning Environment). If the individual grey-collar worker has no high school diploma or a general qualification for university entrance, the gap of the required basic knowledge had to be identified and closed too.

To support the learning progress of the learner and to build knowledge in a structured way, a learning path for Excellence in Lean Logistics was designed within LOPEC (Figure: LOPEC Learning Path). This learning path divides the learning modules into 5 maturity levels which represent a performance improvement sequence. Analysing available and recommended precourses from different universities and countries resulted in three consolidated course “Basic Technical”, “Basic Mathematics” and “Basic Informatics” (Figure: LOPEC Learning Content).

Furthermore the learning content of Lean Logistics got detailed into approx. 105 learning modules, each allocated to in-plant logistics or supply chains. As supporting subjects, 45 tools got detected as need for grey-collar workers to be able to apply correlated Lean Logistics tools and methods.

Figure: LOPEC Learning Environment

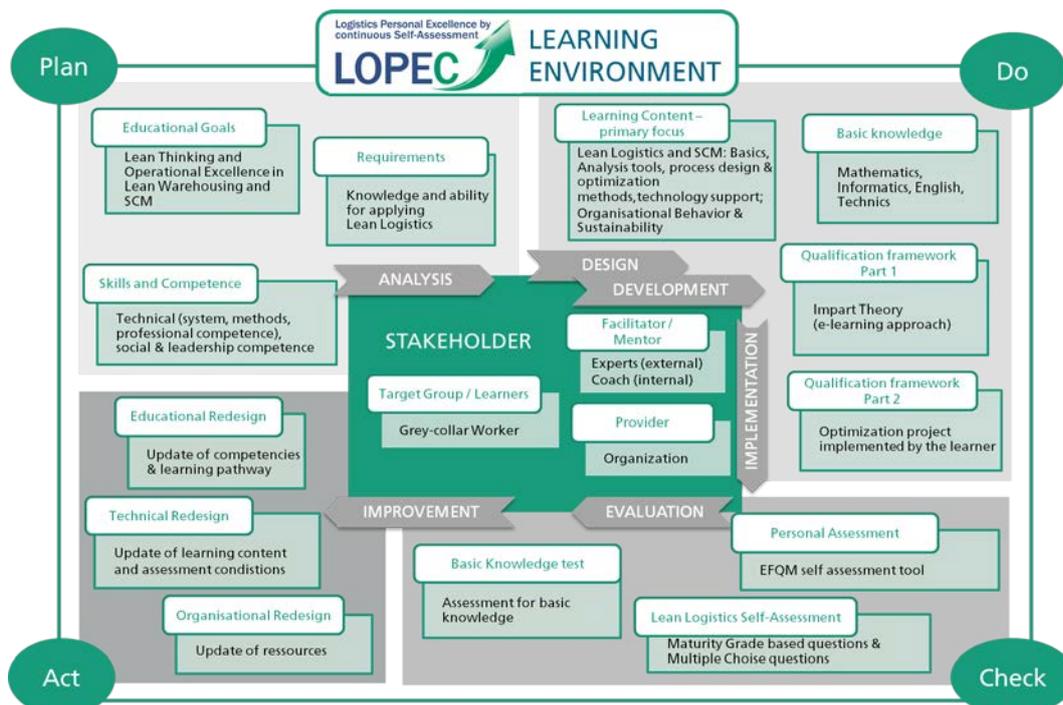




Figure: LOPEC Learning Content

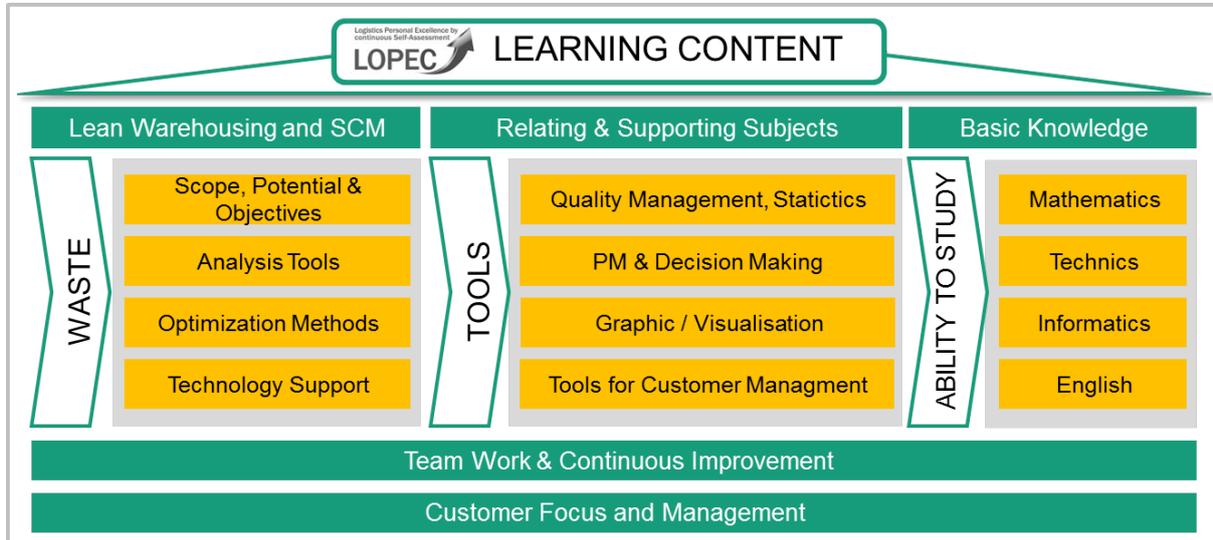
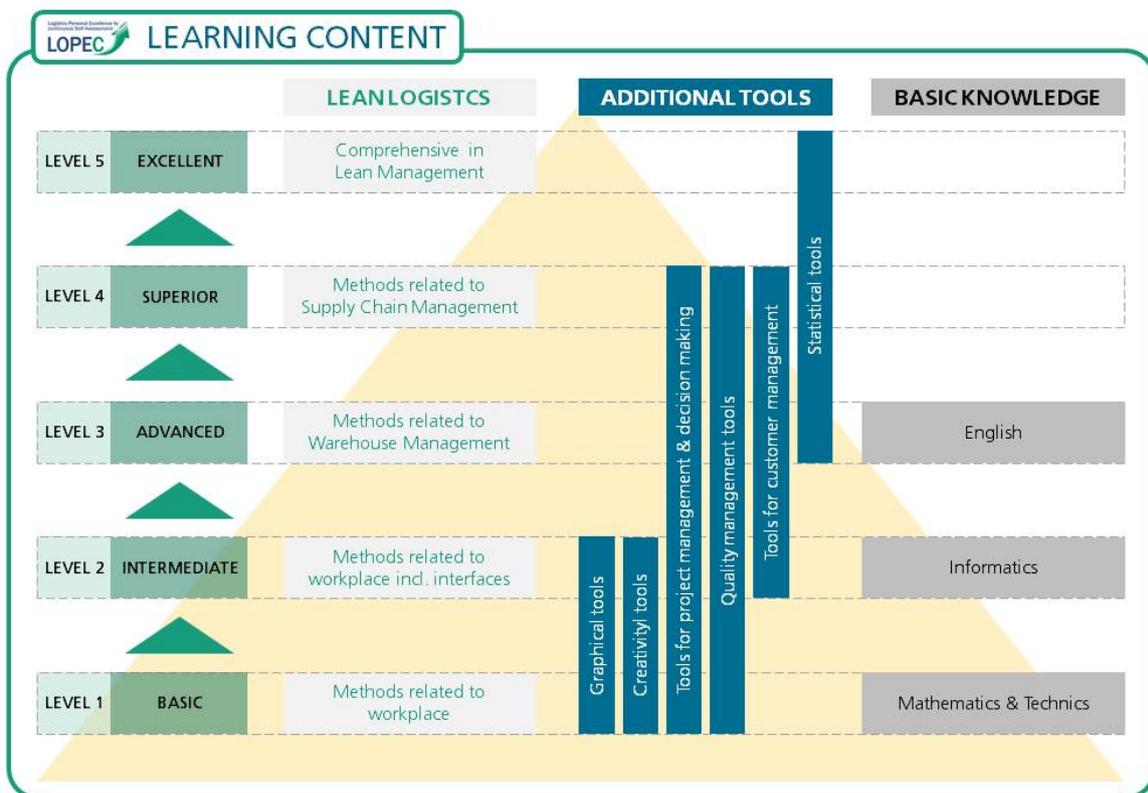


Figure: LOPEC Learning Path





interim result 2: LOPEC PEX Model and LOPEX

To measure the maturity grade of the grey-collar worker an assessment was designed. The assessment had to be divided into separate assessments to cover all aspects of “Personal Excellence in Lean Logistics”. Hence, one assessment focus on personal excellence itself (“LOPEC PEX”), another assessment on the issues and professional circumstances of Lean Logistics (“LOPEX”) as well as another assessment for the testing of the basic knowledge (learning units tests). The sum of the assessments guarantee a holistic exam of an individual and his or her work life balance in combination with his or her excellence to apply Lean Logistics in an organisation.

The LOPEC PEX Model is based on the model of organisational excellence represented by EFQM, including the fundamental concepts, the nine criteria and its scaled assessment procedure with its different international levels (**Figure: LOPEC PEX Model**). On methodical level, PEX refers to the software solutions linked to the GOA SAETO family of self-assessment tools, developed in previous Leonardo da Vinci research projects.

As result, PEX provides a stable nevertheless adaptable tool model with a scaled assessment that makes personal development towards personal excellence in lean logistics from grey-collar workers from a management perspective measurable.

To evaluate the current skills, competencies and capability of grey-collar workers in terms of Lean Logistics, a separate assessment tool “LOPEX” was implemented.

For each learning module of Lean Logistics one of five statements has to be chosen by the grey collar worker to determine his or her current status related to the assessed topic (**Figure: Example of Lean Logistics based questions**). The set of statements is based on the maturity levels of Lean Logistics (1-5 related to “PDCA” and “Waste”) (**Figure: Maturity Levels of Excellence in Lean Logistics**).

Figure: LOPEC PEX Model

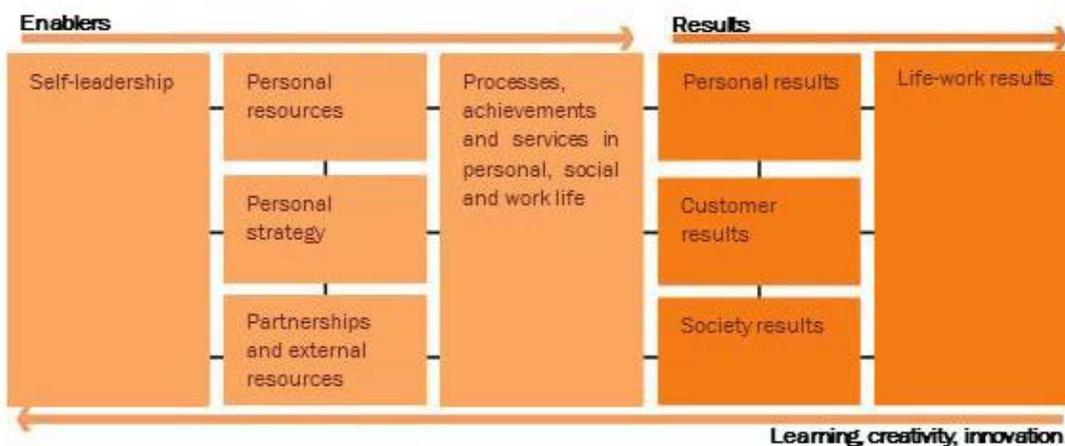




Figure: Maturity Levels of Excellence in Lean Logistics

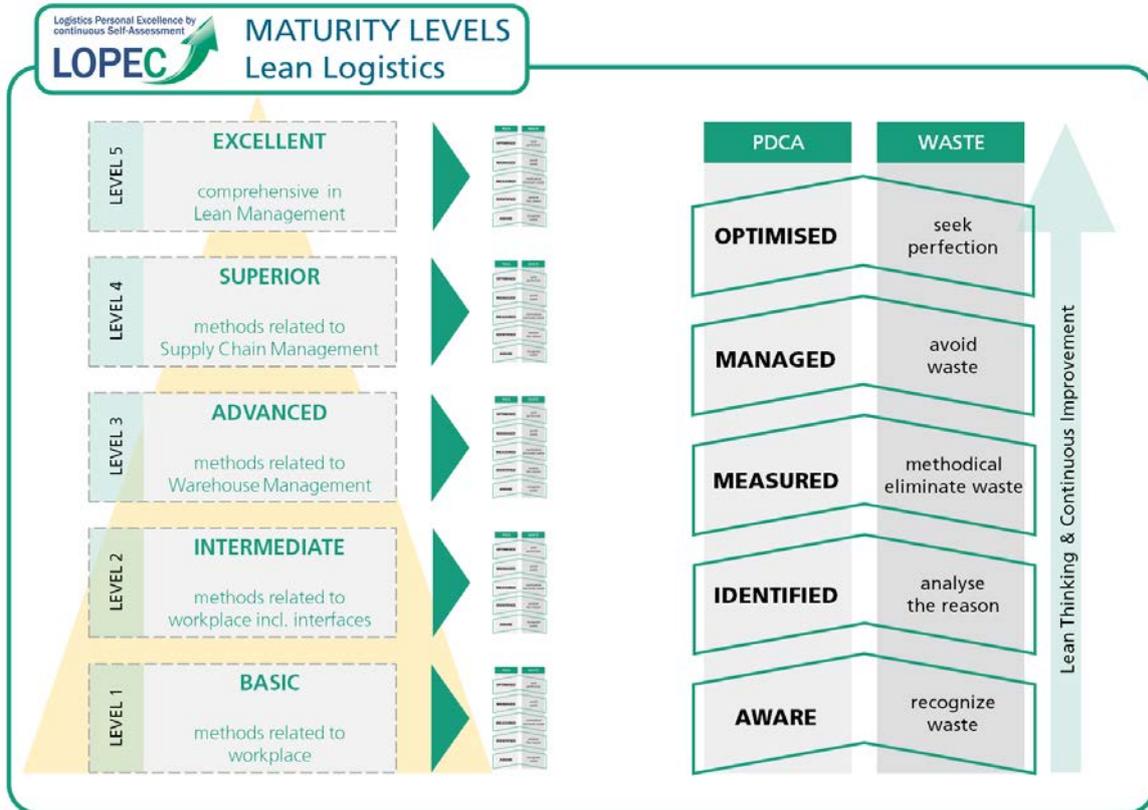


Figure: Example of Lean Logistics based questions

Level	PDCA	Waste	102	FhA
5	Optimised	Seek perfection	Types of waste	
5	Optimised	Seek perfection	I recognize and avoid waste systematically in my processes.	
4	Measured	Systematically avoid waste	I have performed a thorough analysis with regard to waste.	
3	Managed	Methodically eliminate waste	I have implemented a managed process to eliminate waste at my workplace.	
2	Identified	analyse the reason	I have identified waste in processes related to my workplace I am responsible for.	
1	Aware	recognize waste	I know the seven types of waste.	



interim result 3

The learning units and tests regarding to Lean logistics methods and Basic Knowledge were implemented into the learning environment ILIAS.

Figure: Example implemented learning unit into ILIAS

The screenshot shows the ILIAS interface for a learning unit. The header includes the LOPEC logo and the text 'LOPEC Logistics personal excellence by continuous self-assessment'. The user 'Adela Sediva' is logged in. The navigation menu shows 'Personal Desktop', 'Repository', and 'Administration'. The main content area is titled 'Proceeding for Application 2/2' and 'Further Content'. The learning unit is titled 'Types of waste' and includes a section 'Use Case Examples' with the question 'WHERE could you use this tool/content?'. Below this, an example of waste at an assembly line is described: 'Example of waste at an assembly line: Not only the 7 types of waste can be observed but also a lack of flexibility and usage rate that is far too low.' A list of seven types of waste is provided:

1. Waiting time: The person is not performing value-adding activities
2. Transport: There is no value-added in the transport process
3. Stocks: Stocks are fixed capital and lead to increased handling cost
4. Unnecessary processing
5. Unnecessary movements
6. Lack of flexibility: There is only one product build on a line
7. Too low usage rate: Results in waiting time for workers and is the consequence of capital investments that could have been avoided.

 An illustration of an assembly line with various waste points marked with red circles and numbers 1 through 7 is shown to the right. The source is cited as <http://www.vision-lean.de>.

Figure: Example implemented test into ILIAS

The screenshot shows the ILIAS interface for a test. The header includes the LOPEC logo and the text 'LOPEC Logistics personal excellence by continuous self-assessment'. The user 'Adela Sediva' is logged in. The navigation menu shows 'Personal Desktop', 'Repository', and 'Administration'. The breadcrumb trail is 'Repository > ENGLISH > Level 1 BASIC > Lean Logistic L1 > Basics > Types of waste > Types of waste - test 2'. The test title is 'Types of waste - test 2'. The test content includes a question: 'Question 1 of 3 - WHAT (2 Points)'. The question asks 'Waste can be defined as:' and provides four multiple-choice options:

- unnecessary movements in production
- overproduction
- JIT (just-in-time) production
- customer oriented production

 The test interface includes navigation buttons: '<< Go to Introductory Message', 'Suspend the Test', and 'Next >>'. The footer of the interface states 'powered by ILIAS (v4.3.4 2013-07-10) | Imprint | Contact Administration'.