



Lean European Action-learning Network utilising Industry 4.0

WP 5 – LEAN 4.0 Learning Platform

D5.1 LEAN 4.0 Learning Platform

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LEAN 4.0 Version Control Table

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Prepared by	HSOS
Evaluating Partner	UGent
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Contact	Dennis Konusch (dennis.konusch@hs-osnabrueck.de)

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1 Introduction: LEAN 4.0

1.1 LEAN 4.0

LEAN 4.0 is a collaborative initiative between four leading Higher Education Institutions (HEI) and four industrial enterprises that aims to integrate Industry 4.0 smart technologies within the proven Lean Manufacturing paradigm in order to improve factory performances. Besides their necessity in order to face in an efficient way the continuous market changes and needs, knowledges and experiences regarding both the continuous improvement activities associated with Lean Manufacturing and the disruptive technological innovations of Industry 4.0 are still lacking.

Together, the partners of LEAN 4.0 will address this significant gap in knowledge and practical experience, anticipating the European manufacturing industry's contemporary need for development of new skills brought along by "Industry 4.0". By acting as a conceptual framework, LEAN 4.0 will inspire the operation managers of the future and will prepare European Manufacturing for the challenges that lie ahead.

1.2 Work Package 5 – LEAN 4.0 Learning Platform

This work package aims at developing a web-based platform that supports the LEAN4.0 journey of an organization. Different types of partners can use this platform (internal project partners, associated partners and general partners). Internal and associated partners can use this platform as facilitator for the development of the pilot projects since this platform (i) supports the Blended NAL methodology developed in WP3, (ii) facilitates standardized workflows for the pilot projects, and (iii) ensures that partners can visualize, follow-up and have overview of the completed and remaining work. Moreover, students, employees, researchers, and managers from all the different types of partners have access to case descriptions, best practices and learning materials provided by the internal project partners. In this way, teaching and learning will be enhanced.

1.3 Deliverable 5.1 – LEAN 4.0 Learning Platform in a MOODLE application

As mentioned in the previous section, one of the goals of the web-based platform is to facilitate the sharing of project documentation and learning between intra- and inter-firm enterprises (i.e., points i-iii in previous section), as well as to provide easy access to learning materials on cutting-edge advances in Lean and Industry 4.0. Since Moodle enables a learning management system that includes flexible design options for synchronous, asynchronous, online but also offline (download options) learning, it has been chosen as the web-based platform for our project. In this way, it is possible to offer perfect input conditions for different (blended) learning possibilities, documentation of pilot projects, and sharing of knowledge.

2 Structure of the LEAN 4.0 Moodle Platform

As described before, the main goals of Moodle are (i) to facilitate the sharing of project documentation and learning between intra- and inter-firm enterprises and (ii) to provide easy access to learning materials on cutting-edge advancements in Lean and Industry 4.0. To do so, we have provided several contents, which are accessible from the following link¹:

<https://moodle.lean4zero.com/>

We have classified the different contents in four main categories in Moodle, in order to separate them based on their goals and on the audience they are targeting. The four main categories are the following, and they are summarized in Figure 1:

1. **LEAN4.0 Movie.** This is a general and introductory category, where the users can find a short video which tells the story of the LEAN 4.0 Consortium. This makes it clear where the core competencies of the respective project partners lie and how they were used in the course of the project. Moreover, in this section the users can find also a series of animated videos describing in an easy-to-understand way what is the Blended Network Action Learning (BNAL) methodology developed within the project and how to use it through an example.
2. **The link between LEAN and I4.0.** In this category, the users can find theoretical insights provided by the project partners on how to combine Lean practices and Industry 4.0 technologies. Specifically, the focus is on which and how I4.0 technologies can support the four main Lean practices of Just-in-Time (JIT), Total Quality Management (TQM), Supply Chain Management (SCM) and Human Resource Management (HRM).
3. **Operations Manager 4.0.** This category provides the project results related to the pillars necessary for the development of an organization towards a LEAN4.0 organization. In this category, the users can find the different outcomes of WP1-4 and WP7, which can serve as a basis for Operations Managers to develop their organization into a LEAN4.0 organization. Moreover, these results can also be used by HEIs to provide new and more company-oriented learning materials to develop Operations Managers of the future which will be LEAN4.0-oriented.
4. **Student & Pilot projects.** In this category, the users can find the practical outcomes of the LEAN4.0 project. The results from student projects and pilot projects are reported here (either in form of short videos or of A3s), and the different users can have insights on the different possibilities achievable by integrating Lean practices and Industry 4.0 technologies.

¹ There are different types of access. The project participants get a partner access, and they are allowed to provide feedback and participate in the discussions, in addition to see the contents. The outside world can log in with guest access and view and comment on all activities. However, guests are not allowed to make changes to the content. To get partner access, they can contact d.konusch@hs-osnabrueck.de

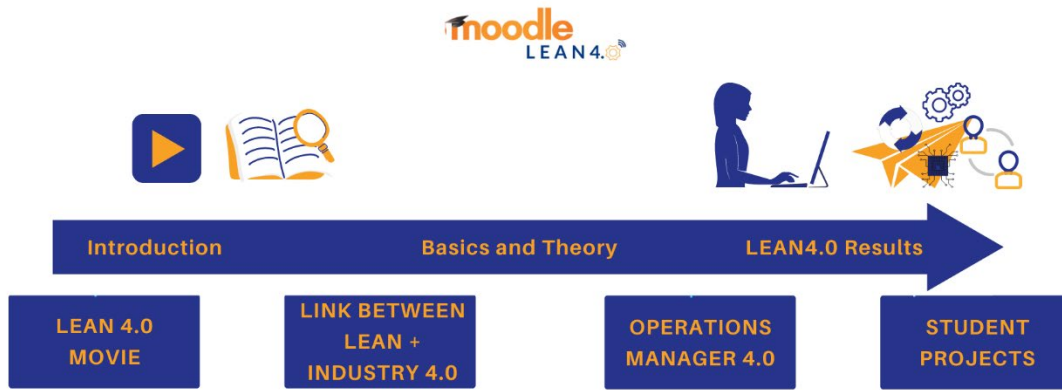


Figure 1: Moodle content-categorization

These four main categories can be accessed from the main page, which is shown in Figure 2

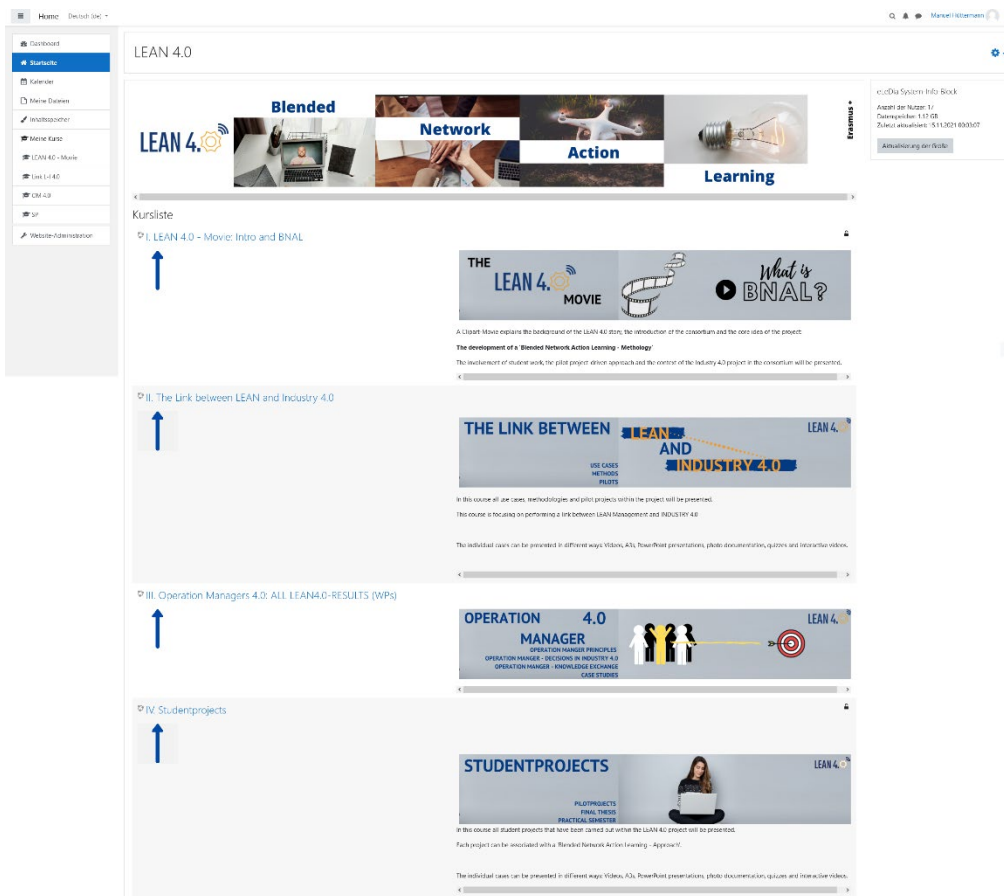


Figure 2: Moodle main page

Finally, the project consortium aims to actively use Moodle also after the end of the project as its so-called "LEAN 4.0 Bridge" (Figure 3).

The Future of the project

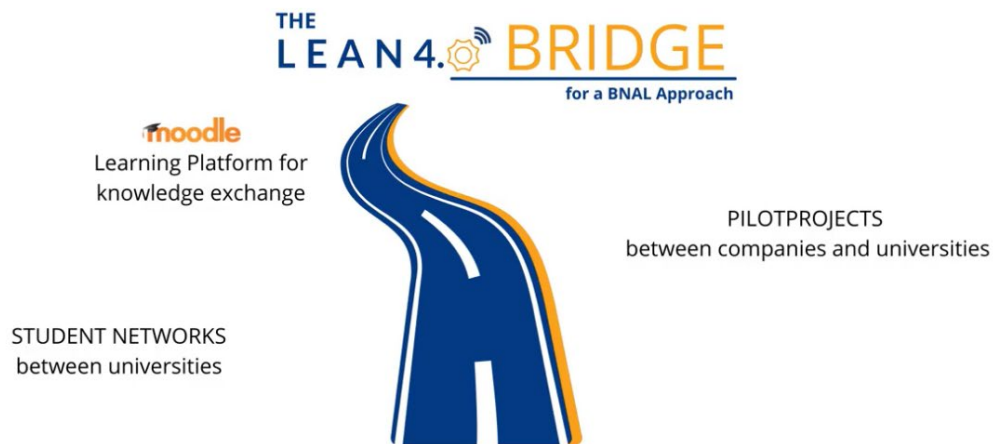


Figure 3: LEAN 4.0 Bridge

The LEAN 4.0 Bridge will enable to keep the contact between the individual stakeholders also after the project, as well as to establish contact with other and new partners to (i) work together on new and join pilot projects, (ii) create student networks between the HEIs, and (iii) ensure an exchange of knowledge. The main goal of the LEAN 4.0 Bridge is that of attracting more and more users in order to create a larger circle of partners for future projects and teaching activities.