The EPLAN Education eLearning Framework as an Example of an International Learning Model for Sustainable CAE Training

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Abstract — EPLAN GmbH & Co. KG (as brand name in the spelling EPLAN) is a global software company that develops CAE software and services for the optimization of engineering processes. As with many companies in recent years, including EPLAN, the development of a comprehensive, sustainable, eLearning-based international training concept began in the COVID-19 period, although the idea had existed for a long time. Within 6 months, the company developed 600 learning contents in 14 languages and two standards, fully localized (including audio and text), for both industrial and educational clients, whereby the education customers were divided by target groups of educators and students. They developed their own LMS system, feedback system and much more. This paper presents how this mammoth project came about and what the results were. The project has meanwhile been awarded the eLearning Award 2024 by the eLearning Journal Germany.

Keywords - eLearning; EPLAN; Education; EPLAN Cloud; self-paced learning

I. INTRODUCTION

Necessity is the mother of invention!

EPLAN GmbH & Co. KG (as brand name in the spelling EPLAN) is a global software company that develops CAE software and services for the optimization of product development processes.

EPLAN employs over 1100 people, has over 50 subsidiaries worldwide and is part of the Friedhelm Loh Group, a holding company with 90 subsidiaries and over 12,000 employees worldwide [1].

As with many companies in recent years, including EPLAN, the development of a comprehensive, sustainable, eLearning-based international training concept began in the COVID-19 period, although the idea had been around for a long time.

The company faced a major challenge, as the task was unique in that the following had to be taken into account:

- The learning content had to be developed to explain the use of our CAD applications in a sustainable way.
- The content had to be fully localized (each branch of the company creates the learning content in its own language with its own screen recording, audio and subtitles). It was not just about English-language content with translation, audio and text, but a complete localization where the screen recording showing the use of the CAD/CAE software had to be also created in the local language version.
- The different learning cultures (Asia, Europe, USA) had to be analyzed and taken into account.

And much more.

This paper shows how such a concept was developed and implemented and gives advice on the practical implementation, availability, and provision to the industrial customers and especially at the educational institutions for use by educational staff, students and pupils using the EPLAN Education software in combination with the so-called EPLAN Cloud environment. It is presented in the following figure:

II. PROJECT DEVELOPMENT

It seems like COVID-19 is long gone, we mostly associate bad memories with this time, but in the context of learning, learning inspiration and ideas, it was a very fruitful time [2]. This is particularly the case in the training departments and academies of industrial companies because some of them were fighting for their existence. EPLAN, like many companies in recent years, began
developing a comprehensive, sustainable, self-paced international training concept during the COVID-19 period, although the idea had been around for a long time. Due to customer requests, in doing so, the learning concept was to be eLearning-based.

The rapid development of sustainability in science and education as well as technological progress have brought about far-reaching and profound changes and effects in all areas of social life, which in turn has completed the transition from industrialization society to a knowledge society, which is based on the know-how and advantages of advanced technology. Educational concepts and learning methods have changed profoundly in the context of computerization, having impact on knowledge creation and knowledge innovation. Today, a multitude of educational models have been developed and implemented at various levels of teaching in order to impart the increasing wealth of knowledge to learners in the best possible way [3,4].

EPLAN, which has branches in more than 50 countries worldwide, was faced with the major challenge of maintaining its training and consulting business, as this was predominantly in face-to-face form up to that point. New ideas and functional approaches that could be implemented in practice in the short term were needed. The task was unique in that the following had to be taken into account:

- Time flexibility of the learner in different countries and cultures
- Different fully localized contents according to diverse languages and standards
- Training of the internal staff on using authoring tools and/or software
- Coordination with other departments like Technical documentation, QA, Training, Marketing etc.
- The total project time (initiation, planning, execution and completion) able was 6 months

In the following, the realization of the idea, which became a feasible project, will be explained, even if it was hardly believable that it was achievable due to the project requirements.

A. Progress of the Project

There is a slight difference between industrial companies on the one side and schools and universities on the other side, when talking about the topic of education. The main difference lies in the definition of the concept of education in terms of time in relation to knowledge. Time is a decisive factor for industrial companies because time means money. The success of the company and thus its financial stability depend on measuring time to market as a decisive KPI. In the case of state-funded or partially funded educational institutions, the COVID-19 period has also caused massive strategic and organizational adjustments, but such institutions have had fewer concerns about financial stability than most industrial companies.

However, both types of organization had one thing in common. And that was the relationship to their customers. Regardless of whether they were pupils or students or commercial customers, in both cases the customers had to be satisfied with the offer. In the case of the project described here, it was also about the mutual benefit, for the customer and for the company, which should emerge from the company's interaction with the customer [5].

The project described here was developed by EPLAN on the basis of an analysis of customer requirements for learning in Europe, Asia and the USA. This analysis, which is not publicly accessible, revealed that there is a need for new forms of training in these geographic areas, including training times, e.g. some of which should be carried out after normal working hours or at weekends. It was now time to make serious changes to the previous learning concept, especially as the provision of user software was switched from a software service contract to a subscription.

In order to respond to customer requirements while supporting the newly established subscription model, the development and the offering of the online training courses (VILT) in addition to the existing classroom training courses was necessary and, secondly, entirely redevelopment of the self-paced learning segment, taking into account the characteristics of the various learning behaviors from the different countries.

B. Definition of the Project Objectives

One of the initial steps in implementing the project was a clear definition of the project objectives. These project objectives included:

- To develop a sustainable learning concept that is consistent with and complements the existing EPLAN Academy learning formats
- To develop the EPLAN definition of "eLearning"
- To establish an international standardization of the project implementation
- Not to disrupt the existing training business, but rather to positively influence it
- To support the renewal business by providing the annual update training in eLearning format as part of the globally rolled out subscription model for customers (also in China, by the way, taking into account the Chinese provider environment)
- To develop a corresponding rollout, together with the other departments such as EPLAN Cloud Team, Marketing etc
- To have and maintain motivation and fun at work

These project goals were very diverse and interdisciplinary, yet they had a decisive influence on the success of the project, especially because the project time was very tight and goal-oriented work on the success of the project was of crucial importance.

C. Target Groups

There were three main target groups that were to be served with the new knowledge, but also with new educational materials and forms. These were: the industrial customers, education customers and the internal employees of the company.
The reason for it was that EPLAN had previously trained the industrial customers mostly in the face-to-face learning formats. By providing the so-called EPLAN Education software application for students and teachers, their educational customers were consequently a further customer group, so that the learning content should also be usable for educational institutions.

Another target group were and are the internal EPLAN employees, as for example trainers or consultants. The content is particularly interesting for them in order to prepare for the new topics, especially the topics relating to update training for the new EPLAN software version.

This paper specifically addresses the project in relation to the customer group of EPLAN Education customers.

### III. EPLAN Education

EPLAN Education is a department of the company EPLAN, which takes care about the needs of educational institutions, students, and educators (teachers, lecturers, professors). For all students there is the possibility to download the last three versions of the EPLAN Education software free of charge via the EPLAN website [4]. With the offer made by EPLAN Education unit, prospective engineers at schools and universities can use various software solutions. This includes not only the main EPLAN product, Electric P8, but also add-on modules such as Pro Panel, Fluid or Preplanning. This means that the range of projects that can be created is very extensive, and teachers and students can use EPLAN Education software to realize everything from simple to more complex projects, like solutions related to Augmented Reality. The unit also provides a wealth of additional information for learners, such as video installation instructions, information on the new features of the new version and, information on the eLearning modules for educators and students. The landing webpage is presented in the following figure:

- The materials are fully localized in 16 languages (including audio and subtitles)
- Access to the learning materials is fully open, which means that students can work with the materials outside of the school, enabling hybrid forms of learning such as flipped classroom or blended learning
- Lecturers are not only given access to the extended learning materials, but also to solutions, which is helpful for creation of the own didactical lesson plan
- Lecturers also receive ready-made, assessment-worthy templates so that they can also directly assess their students’ performance based on these

More information about the functions can be found in the following video:

<table>
<thead>
<tr>
<th>Language</th>
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<tbody>
<tr>
<td>English</td>
<td><a href="https://vimeo.com/648545410/5a179b71e">https://vimeo.com/648545410/5a179b71e</a></td>
</tr>
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</table>

The new self-learning concept in eLearning format is used at over 2,500 educational institutions and has already been used by 101,000 students worldwide in the last 3 versions alone. This eLearning-based training project closes the gap between theory and practice and ensures a decisive knowledge advantage. The main features of the EPLAN Education eLearning-based solution are:

- Students can learn how to engineer with EPLAN from the start, and are empowered to create an error-free project
- The LMS is structured in such a way that the navigation is analogous to the navigation of the EPLAN software, where so-called navigators are used. This ensures that the user does not have to learn anything new when using the LMS
but can enter the system spontaneously and switch seamlessly between learning and using it.

This means that not only educational institutions but also lecturers and students are fully equipped with all EPLAN related learning materials and a modern learning environment.

IV. METHODOLOGICAL-DIDACTIC CONCEPT AND PROJECT IMPLEMENTATION

For many years, the EPLAN Academy had been developing its own methodological and didactic training model for the basic and update training courses, which served as the basis for the development of the new, self-directed learning materials in eLearning format. However, the existing methodological-didactic training model could not be adopted as it was not fully suitable for self-directed learning. It had previously been developed for the face-to-face training courses conducted by a trainer.

When the new EPLAN software platform, for which the update training was developed, was in the final phase of development, the EPLAN’s Professional Education team, responsible for creation of the new self-paced learning form, met with other stakeholders, colleagues from the other specialist departments such as Research & Development, QA, Technical Documentation and EPLAN Academy with the aim of jointly agreeing which innovations should be incorporated into the eLearning concept of the new so called Update Training to be created in eLearning format. In this way, the Professional Education department wanted to ensure that certain aspects were not lost. There are numerous articles on the role and importance of stakeholder involvement in the project planning phase, we refer here to some [5,6,7].

Due to the limited project duration of 6 months for the entire project, the Professional Education department, which is mainly responsible for the development of the self-learning training, was granted exclusive access to the developer version of the EPLAN software so that they could review the new updates of the EPLAN platform developed by the research and development team and the help system developed by the technical documentation together with the Training Academy team in time, understand the new software features and later demonstrate them in the eLearning content.

Very important step was that the Professional Education team first had to understand what is needed to be done before they could start developing the learning content. In addition, they had to agree with the stakeholders which topics should be covered in the self-paced learning modules and, above all, how.

The question of “how” has many aspects that need to be considered, such as the cultural differences in learning in different countries, organizational aspects related to the localization process as each module created in the source language needs to be localized (translated) into the other 14 languages, training of colleagues in other EPLAN branches to enable them to localize content, checking the possibility of using good quality audio and text translations, etc. These are just some of the important aspects that had to be considered before starting the implementation process.

The content developed was primarily intended to be used in the education sector, i.e. by educators and students in educational institutions.

A team was formed with representatives from various departments and there were many meetings, consultations and tests. The importance of time and project planning, but above all the working atmosphere, were self-evident. Constructive discussions and a culture of error were encouraged.

By the time everything had been decided, the Professional Education team had developed the procedural, methodological and didactic concept, which was to be uniform but accepted in different countries.

Then it was time for implementation.

The 40 contents in English, divided into 5 main topics, were created using the two technical standards IEC and NFPA used in the USA and in other international regions.

This content was then localized into 14 languages (English, German, Italian, Spanish, Dutch, Danish, Swedish, French, Russian, English (USA), Korean, Japanese, Chinese, Portuguese (Brazil), Czech.), with the result that 600 learning contents were created within 6 months, which were also deployed in the self-created LMS during this time.

In the project, not only the above-mentioned features were implemented, but also other features, namely analytics, reporting and a feedback system that enables EPLAN customers to give feedback on the system and the content or to express wishes as to what content they need for daily engineering with EPLAN.

The following links provide access to some of the trailer videos that were part of the project:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Italian</td>
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<tr>
<td>Spanish</td>
<td><a href="https://vimeo.com/643988439/2c5e473e00">https://vimeo.com/643988439/2c5e473e00</a></td>
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<tr>
<td>English</td>
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<tr>
<td>Chinese</td>
<td><a href="https://vimeo.com/670251665/af3f0223b8">https://vimeo.com/670251665/af3f0223b8</a></td>
</tr>
<tr>
<td>Korean</td>
<td><a href="https://vimeo.com/661965883/f34f11b71">https://vimeo.com/661965883/f34f11b71</a></td>
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</tbody>
</table>

*F. Update Training – Trailer Videos*
V. eLEARNING AWARD

No other company is known to have achieved this to this extent, 600 learning contents, created within 6 months and localized into 14 languages and two standards, in this quality and in this time.

This has not gone unnoticed by others. For example, the eLearning Journal Germany awarded the project with the eLearning Award 2024 for the specialist area of learning transfer.

VI. CONCLUSION

The project presented here is an exemplary scenario for the development of international learning programs for educational institutions and students. The success of the project depended on several factors, including a proper needs analysis, proper project planning and stakeholder involvement, and the development of the methodological-didactic model, in addition to the development of a dedicated LMS and the organization of the localization scenario. All this within 6 months and 600 content units in two standards. Achieving all this within 6 months and reaching 600 localized learning contents in 14 languages and in two standards is unique so far.

REFERENCES