Co-funded by the European Union

Call for Proposals
for Activities to be executed in 2023

ANNEX A.
Education Pillar Basic Concepts and Glossary
Version 1.0

EIT Manufacturing

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1 Foreword

EIT Manufacturing Education Pillar seeks to increase the innovation capacity in EU by education, upskilling and reskilling future and current manufacturers.

Along its three programs **Empower, Connect and Transform,** and **Engage**, focuses in different target groups in order to ensure training and education through the complete life time of learners as well as of companies. By putting the humans on the center, we look into engaging, connecting and empowering them to become the backbone of a strong European Manufacturing Innovation Community and a prosperous and inclusive society.

Education at EIT Manufacturing is **learner-centric**, and **inclusive**. It aims at the development and assessment of target **learning outcomes** and **competencies**, through innovative, engaging, enjoyable learning experiences with an orientation towards innovation, entrepreneurship, and solving social challenges. It is therefore not limited only to higher education and it goes beyond knowldege transfero.

2 Skills.move: digital learning content

Skills.move is EIT Manufacturing's digital learning platform. It aims to support Europe's manufacturing industry to upskill and reskill its current and future workforce by providing individuals easy access to a digital learning experience.

The curriculum has been co-created with EIT Manufacturing's partner community in line with pre-identified industry needs.

This platfotm is the main showcase and access point for EIT Manufacturing Eudaction Offer.

Proposals in call 2023 can contribute to the enhancement of Skills.move throughout the different segments by developing digital learning content. In order to avoid duplication of content and to be able to reuse the existent content it is important that the consortia evaluate what is currently available. The list of the current learning nuggets is available Excel format upon request. Moreover partners can register to the platform and have direct access to the available content.

2.1 Skills.move concept

Skills.move is structured as illustrated in Figure 1 and described in the following two chapters. The main learning units are called nuggets and aggregated together they conform learning paths. At the same time the combinatio of several learning paths create a learning journey.

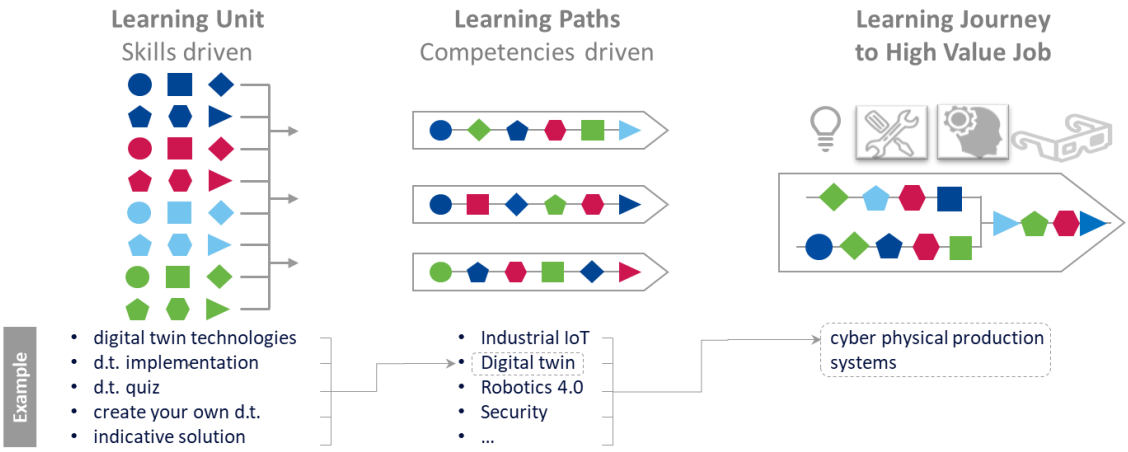


Figure 1. Skills.move architecture

2.1.1 Learning Nugget

Nuggets (learning units) are **self-contained learning elements** composed by different kind of didactic media like videos, text, images, animations, AR/VR sessions and learning assessments **to achieve and to verify desired competencies or skills.**

Nuggets are by definition **short learning content** with a maximum duration of 30 minutes (recommended 15 minutes) in order to engage learners.

Each learning nugget can be consumed as stand alone lesson, it should address at least **one skill** and have well defined **learning outcomes** that should be measurable.

Moreover, learning nuggets should be **interactive** and **appealing** for the learners, for this reason they should be developed keeping in mind that they're digital learning content to be delivered asynchronously.

Three or more nuggets can be aggregated in order to create a learning path.

As a general rule, Nuggets produced through EIT M funded activities are open access and accesible to all learners in Skills.move, in order to boost EIT Manufacturing impact.

2.1.2 Learning Path

The aggregation of three or more learning nuggets allows to create competency-oriented **learning paths**. Each learning path must:

- address at least one **competency**,
- have well defined overarching **learning outcomes,**

In order to be considered as a learning path for KPIs achievement, the learning path structure should include:

- an **introduction**, with the description of the learning path that clearly states the topics illustrated, indicates what the learner will be able to do after its completion (learning outcomes) and defines the level of difficulty and pre-requisites;
- a **core;**
- **a final assessment** that measures the achievement of the learning outcomes;
- well defined **metadata**

The succesfull completion of a learning path leads to the realease of a certificate for the learner. Moreover several learning paths can be combine for creating a complete **learning journey**.

Note that learning paths can include nuggets developed by other projects in previous years or during the running year.

Learning paths are sold through Skills.move. The price is set by EIT Manufacturing in agreement with the authors depending on the duration of the learning path and the complexity of the media and tools used.

2.1.3 Learning Outcomes

"Learning outcomes are statements of what a learner knows, understands and is able to do on completion of a learning process, defined in terms of knowledge, skills and competences."

Source: European Centre for the Development of Vocational Training – Cedefop

As mentioned above EIT Manufacturing Education pillar follows a learner centric approach, therefore all the learning content developed, including digital contet (nuggets and learning paths), should be based in clear and sound learning outcomes (LO).

Learning outcomes are defined in terms of knowledge, skills and competences. They enable both the students/learners and teachers/trainers to clearly identify what a student is expected to have achieved or have made progress towards achieving on completion of a module (e.g., nugget or learning path).

Well written learning outcomes follow a SMART criteria, they should:

- Describe **SPECIFIC** knowledge, skills or compence resulting froma learning activity
- Be **MEASURABLE** trough assessment and evaluation
- Be **ACHIEVABLE**
- Be **RELEVANT**
- Be **TIME-BOUND**

3 Teaching and Learning Factories

3.1.1 Teaching Factories

Teaching Factories are a quite unique didactic method promoted by EIT Manufacturing. As defined by Rentzos et al. 2015, the Teaching Factory is a "two-way street", where from the factory, practitioners teach students and from the classroom, students and faculty teach practitioners. This two-way street is realized via internet and is a continuous process over a lengthier period of time, with regular sessions and continuous interaction between the factory and the classroom.

In other words, the Teaching Factory is an environment based on the Open Innovation paradigm where students, researchers and enterprises work together to mutually develop skills, promote and share expert knowledge through co-creating solutions to industrial manufacturing challenges.

2020 has been mainly dedicated to the creation of network of Teaching Factories in order to create a shared framework, model and processes.

In 2021 the Teaching Factories Networks have been encouraged to use the framework created in 2020 to start delivering real training experiences.

In 2022 EIT Manufacturing will launch the first "Teaching Factory Competition".

Detailed information of the education activities that have worked on developing Teaching Factories networks, iavailable in EIT Manufacturing website.

Education Activities can used the Teaching Factory paradigm and apply the shared framewok, model and processes to enhance their learning experience.

3.1.2 Learning Factories

Learning Factories represent a realistic manufacturing environment for education, training, and research. They are a physical learning environments containing didactical instruments and equipment, effectively creating the work conditions of a real industrial site for didactic and training purposes. Learning Factories are used for delivering hands on experiences and promote a learn by doing approach.

2020 has been mainly dedicated to the creation of network of Learning Factories in order to create a shared framework, model and processes, with the overall aim to build an international ecosystem able to foster research and technology transfer between academia and industry.

In 2021 the Learning Factories Networks have been encouraged to use the framework created in 2020 to start structuring and delivering real training experiences.

4 The Digital Content Agreement

The Digital Content Agreement (DCA), is EIT Manufacturing specific agreement and is a financial sustainability mechanism. It rules the rights and obligations of EIT Manufacturing and the owners of the digital content developed under EITM funded activities (appartaining to the different pillars). The

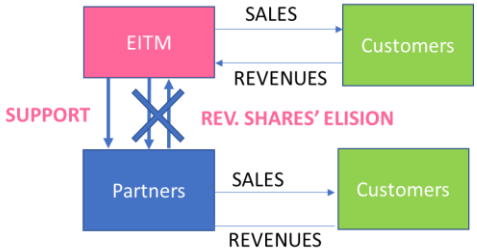
agreement defines the terms of use, distribution and exploitation of the digital content developed under the funded activities for EIT Manufacturing and the partners.

All partners developing digital learning content for Skills.move are requested to sign the DCA and they commit to do so when submitting the proposal. The DCA is available in Plaza downloadble through this link.

The following parragrahps briefly described the two options partners can choose when signing the DCA.

FULL Skills.Move: Funded partners license EIT Manufacturing to exclusively commercialize the learning content on Skills.Move, with revenue shares for the owners of the content.

LIGHT Skills.Move: Funded partners license EIT Manufacturing to non-exclusively commercialize the learning content on Skills.Move, therefore they can also exploit the learning content by their own means. In this case EITM should receive revenue shares from the partners' sales and the Partners should receive revenue shares by EITM. For the sake of simplifying the accounting, the two streams of revenue shares are elided (compensated by default).



5 Key Concepts

5.1.1 Business Owner

The Business Owner is the partner in charge of the commercialization and exploitation of the results of the project. The Business Owner should be structured in such way that within its core activities it is foreseen the commercialization of products and services to a wide audience (e.g. not limited to their students in case of universities).

5.1.2 Instructional Designer

According to ESCO the Instructional Designer role is to develop instructional material for training courses using multimedia technology and authoring tools. They aim to create instructional experiences which make the acquisition of knowledge and skills more efficient, effective, and appealing.

As per ADDIE model the Instructional Designer is usually supporting the whole process of online learning development from the analysis, design, development, implementation and evaluation.

The Instructional Designer should be able to:

- Create engaging learning activities and compelling course content
- Work with subject matter experts to identify the target audience's training needs
- Set instructional end goals and create content that matches them
- Visualize instructional graphics, the user interface and the finished product
- Analyze and apply trends and best practices in learning technologies and instructional design
- Provide exercises and activities that enhance the learning process

- Create supporting material/media (audio, video, simulations, role-plays, games, etc)
- Devise modes of assessment, such as tests or quizzes, to measure the effectiveness of the course

5.1.3 Manufacturing Company:

Companies with NACE cat. C Manufacturing.
Consultancy companies or software house will not be accepted as manufacturing industrial partners.

5.1.4 Rollout & scalability plan:

The rollout and scalability plan should define the strategy for the introduction and integration of the results of the projec into the market, manufacturing ecosystem or society. It should clearly state how the solution can be scaled up to a wide number of learners, users and/or pupils and indicate the target of users to be reached in the following years.

6 Glossary

BP: Business Plan
CLC: Co-location/affiliate of EIT Manufacturing
DCA: Digital Content Agreement
DN(s): Digital Nugget(s): smallest self-contained unit(s) of digital learning content
EIT: European Institute of Innovation & Technology
EITM: EIT Manufacturing Asbl
FS: Financial Sustainability
HE: Horizon Europe Program
HEI: Higher Education Institution
KIC: Knowledge Innovation Community
LF(s): Learning Factory(ies)
LFN(s): Learning Factories' Network(s)
LO: Learning Outcome
RIS: Regional Innovation Scheme adopted by the EIT
RIS Country: EU Members and Associated Countries modest or moderate innovators according to the European Innovation Scoreboard and addressed by specific policies.
Skills.move: EIT Manufacturing digital learning platform
STEM: Science, Technology, Engineering Mathematics (disciplines)
TF(s): Teaching Factory(ies)
T&LFs: Teaching & Learning Factories
T&LFN(s): Teaching & Learning Factories' Networks
XKIC: Cross-KIC, referred to activities implying collaboration across different Innovation Communities.