

Educational Package Specification:

Sustainable digital transformation (SDT)

Within the Erasmus+ Knowledge Alliance ProDiT – Projects for the Digital Transformation

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Authors: Joserra Otegi (UPV/EHU), Carolina Cruz (UPV/EHU), Abouzar Daneshpajouh (UPV/EHU), Jorge Maldonado (FH Do), Corinna Köbler (FH Do), Iñigo Aizpuru (Ihobe)

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ProDiT
Projects for the Digital Transformation

1. Summary

The **Educational Package “Sustainable digital transformation (SDT)”** delivers the competences for managing the digital transformation sustainably, leading digital transformation projects to the desired impact.

Overall Learning Outcome: Participants will learn:

- to manage the digital transformation sustainably with projects
- to assess and manage the sustainability of digital transformation (DT) projects, e.g. by applying the Digital Sustainability Canvas (DSC)
- to lead digital transformation (DT) projects to the intended impact, e.g. by applying result-oriented monitoring

Target Group Analysis:

- Students in Master’s programmes need the competences in addition to their degree major, e.g. management, IT or engineering
- Professionals need the competences as they progress into project management positions
- Consultants need the competences in order to analyse and support the digital transformation, including sustainability audits

Competences & Learning Outcomes: The main competences are:

- Knowledge about the methods, tools and processes for a sustainable digital transformation, including sustainability assessment and controlling of DT projects
- Practical skills in order to plan and execute the digital transformation and digital transformation projects in a sustainable way and with the intended impact
- Scientific reflection about the issues and concepts behind a sustainable digital transformation
- Ability to lead the sustainable digital transformation successfully

Selection of Content: Main topics addressed by the package:

- Sustainable Digital Transformation
- Life-cycle Analysis and Sustainable Management
- Managing Digital Change
- Management Systems & Audit
- Development Project for a Sustainable Digital Innovation
- Scientific Methods and Tools for the Sustainability Analysis of the Digital Transformation

Concept and composition of the package: The package is composed out of 2 mandatory modules, 1 elective (1 out of 2), a project (with project thesis) and a scientific seminar.

Teaching Materials/Literature/Media/Technical Requirements/Lab Equipment: Digital infrastructure for agile project management.

Tailoring & Educational Tracks (Practical, Entrepreneurial, Scientific): Tailoring options are focussing on the usage in Master's programmes (Scientific Track) or company trainings (Practical Track).

Competence Assessment: Competence assessment is done with online tests (including self-assessment), oral exams, project assignment reviews, presentation, writing of scientific papers/reports.

Curricula Integration: Educational programmes can integrate the package as:

- single modules as electives
- complete package as a 30 ECTS minor in Master's programmes
- project assignments

in educational programmes like Master's in Management or Business Administration, Master's in Sustainability, Master's in Project Management, Master's in Informatics, Business Informatics, Information Technology

Quality Evaluation:

t.b.d.

Change History & Ownership:

Release V1.0: Initial version of the specification of the edupack "Sustainable digital transformation (SDT)", 09.09.2022

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2. Introduction to the educational package

The educational package (edupack) on “Sustainable digital transformation (SDT)” delivers the relevant project management competences:

- to manage the digital transformation of an organisation to a higher maturity level with projects,
- to manage the work within agile and projectized organisations, e.g. by doing projects, and
- to develop organisational and individual knowledge and cope with the fast change.

The competence is delivered by providing:

- the mandatory module “Sustainable Digital Transformation” (6 ECTS),
- the mandatory module “Life-cycle Analysis and Sustainable Management” (6 ECTS)
- the elective module (choose 1 out of 3) “Managing Digital Change” (6 ECTS)
- the elective module (choose 1 out of 3) “Management Systems & Audit” (6 ECTS)
- the elective module (choose 1 out of 3) “Scientific Methods and Tools for the Sustainability Analysis of the Digital Transformation” (6 ECTS)
- the team/individual project assignment “Development Project for a Sustainable Digital Innovation” (12 ECTS)

The edupack addresses topics like:

- What is a sustainability? What is sustainable project management? What impact can the digital transformation develop on people, planet, profit (PPP)?
- How can the sustainability of digital transformation (DT) projects be assessed? What are sustainability aspects and how can canvas models be used for it?
- How can DT projects be controlled and managed with a focus on sustainability and impact?
- What are relevant sources of information about the topics? What are recent developments in the field? Is there key literature?

3. Educational package Description

3.1 Overall Learning Outcomes

The main competences are (according to EQF [1][2]):

- Knowledge about the methods, tools and processes for sustainable management of the digital transformation and DT projects
- Practical skills in order to plan and execute a sustainable digital transformation project, including the assessment and controlling of sustainability aspects
- Scientific reflection about the issues and concepts behind the digital transformation and respective sustainability considerations
- Ability to lead the digital transformation sustainably and successfully

Learning Outcomes/Competences need to consider several competence domains [3]:

- **Technical Competence:** This involves digital literacy in the relevant tools, project management tools and methods, scientific methods and tools.
- **Professional Competence:** This involves
- **Global Competence:** This involves

The **Overarching Learning Outcomes (OLO)** [5] are: t.b.d.

3.2 Target Group Analysis

Relevant target groups are:

- Students in Master's programmes need the competences in addition to their degree major, e.g. management, IT or engineering
- Professional need the competences as they progress into project management positions
- Consultants need the competences in order to analyse and support the digital transformation, including sustainability audits

3.3 Competences & Learning Outcomes

This chapter contains a more detailed description of the competences delivered by the educational package.

t.b.d.

3.4 Content

Main topics addressed by the package:

- Sustainable Digital Transformation
- Life-cycle Analysis and Sustainable Management
- Managing Digital Change
- Management Systems & Audit

- Development Project for a Sustainable Digital Innovation
- Scientific Methods and Tools for the Sustainability Analysis of the Digital Transformation

3.5 Concept and composition of the package

A) Overall concept, curation of content, didactic concept

Format & Content	Competence & Learning Outcome	Main Format:
<p>Theoretical knowledge (self-learning):</p> <ul style="list-style-type: none"> • Online Module • Distance Learning Material • Lecture (real/virtual) 	<p>Learning Outcome: Know the SotA (State-of-the-Art) => knowledge</p>	eLearning
<p>Practical skills (Hands-on, Project):</p> <ul style="list-style-type: none"> • Training (e.g. Tools) • Project (with industry) • (virtual) Lab • (professional certificates) 	<p>Learning Outcome: Projects, inter- disciplinary, international => skills</p>	Workshop/ Project/Block (Presence)
<p>Scientific Work:</p> <ul style="list-style-type: none"> • Seminar- or homework • Scientific publication (paper) • Report (e.g. survey) 	<p>Learning Outcome: Critical reflection, Scientific context => ability/attitude</p>	individual scientific contribution

Figure 1: Didactic Formats per Competence Area [see specification “Educational & Didactic Concept”]

The educational package follows the following concept:

- Knowledge about the methods, tools and processes for sustainability assessment and controlling for the digital transformation will be provided within 2 mandatory eLearning modules and 1 (out of 3) elective eLearning modules. The educational resources will contain online courses, classical lecture slides, video courses, tutorials, reading materials etc.. Knowledge is delivered and also assessed with tests and exams. Prior knowledge is assessed with self-assessments.
- Practical skills are already addressed in the mandatory and elective modules by conducting team exercises and small project assignments. Industrial case studies are used.
- Practical skills (including overarching learning outcomes (OLOs), professional and global competences) are intensively trained by conducting a development project for a sustainable digital innovation, usually as a student team, solving a realistic problem for an industrial case study, generating realistic work situations. The management project might be conducted cross-border in an international setting.
- The ability to lead the digital transformation towards a sustainable impact and to fill certain roles in digital transformation projects is trained by preparing students for such roles, put them into the roles in projects, and by letting them reflect on the role afterwards.

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- The scientific competences for analysing, reflecting and researching on the sustainable digital transformation are delivered with small scientific assignments (e.g. homework) in the mandatory and elective modules, an optional scientific seminar (including courses on research methods & tools, actual research tasks, and writing a scientific paper for a Master student conference), and a possible scientific thesis on the management project. This can be later continued into a scientific publication and/or a Master thesis.

B) Educational Elements

The package is composed out of:

- eLearning Modules (including online courses)
 - Sustainable Digital Transformation (6 ECTS), mandatory
 - Life-cycle Analysis and Sustainable Management (6 ECTS), mandatory
 - Managing Digital Change (6 ECTS), elective
 - Management Systems & Audit (6 ECTS), elective
- Projects (including methodology, templates, courses on project-based work)
 - Development Project for a Sustainable Digital Innovation (12 ECTS)
 - Or as an alternative: Company Internship (12 ECTS)
- Case studies (digital description, data, materials)
- Scientific elements:
 - Scientific Seminar, 6 ECTS, elective

C) Teaching & Learning Activity Plan

Example (of a project management educational package):

Mandatory (Core) Modules	ECTS	Description
Sustainable Digital Transformation	6	Including the Digital Sustainability Canvas (DSC)
Life-cycle Analysis and Sustainable Management	6	
Elective (Additional) Modules		
<i>Managing Digital Change</i>	6	
<i>Management Systems & Audit</i>	6	
Scientific & Practical Elements		
Scientific Seminar (Elective)	6	scientific methods and tools for the analysis of the sustainability of the digital transformation, including e.g. course on Research Methods &

		Tools, assignment of writing a paper for a student conference
Development Project for a Sustainable Digital Innovation	12	Students conduct a team project (2-4 students per team) on a consulting case study and present the results
<i>Company Internship (alternative to management project)</i>	12	<i>Student conduct an internship and deliver an internship report</i>

3.6 Teaching & Learning Resources

Learning Management System (LMS): moodle

IT tools for project management (e.g. Atlassian Confluence, Jira)

IT tools for collaborative work (Microsoft 365, Teams)

Required digital learning resources:

- Case studies, t.b.d.
- Online courses, t.b.d.
- Tutorials and reading materials, t.b.d.

3.7 Tailoring & Educational Tracks

The educational package will implement 2 Educational Tracks:

- Practical: focus on professionals and consultants => company training programme
- Scientific: focus on Master's students

3.8 Assessment Methods

Planned assessment methods:

FORM	ECTS	REMARK
Sustainable Digital Transformation	6	Team project + presentation (50%) and oral exam (50%)
Life-cycle Analysis and Sustainable Management	6	Team project + presentation (50%) and homework (50%)
<i>Managing Digital Change</i>	6	<i>Team challenge (50%) and online test (50%)</i>
<i>Management Systems & Audit</i>	6	<i>Practical demonstration (audit results) (50%) and written exam (50%)</i>

<i>Scientific Seminar</i>	6	<i>Test (Research Methods & Tools) (30%), Scientific Paper presented at conference (70%)</i>
Development Project for a Sustainable Digital Innovation	12	Project pitch as team presentation (30%), product/service demonstration (30%), written reflection report (40%)
<i>Company Internship</i>	12	<i>feedback of employer (30%), internship report (30%), presentation of work results (40%)</i>

3.9 Curricula Integration

Educational programmes can integrate the package as:

- single modules as electives
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- project assignments

in educational programmes like Master's in Management or Business Administration, Master's in Sustainability, Master's in Project Management, Master's in Informatics, Business Informatics, Information Technology

3.10 Quality Assurance - Evaluation

Quality Assurance – Evaluation

T.b.d.

4. References

[1] EU: The European Qualifications Framework: supporting learning, work and cross-border mobility, Luxembourg: Publications Office of the European Union, 2018

[2] EU: Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), <https://enqa.eu/index.php/home/esg/>, Brussels, Belgium, 2015

[3] Rajala, S.A.: Beyond 2020: Preparing Engineers for the Future. Proceedings of the IEEE, Vol. 100, pp. 1376-1383, DOI 10.1109/JPROC.2012.2190169, 2012

[4] European Institute of Innovation and Technology (EIT), “Quality for learning” EIT Quality Assurance and Learning Enhancement Model, https://eit.europa.eu/sites/default/files/eit_label_handbook.pdf, 2016