Project 101123471 - EDGE-Skills

WP4: D4.7 Report of the training program



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1. Introduction

The EDGE-Skills training programme teaches partners how to onboard a service or data offering into a data space built on the Prometheus-X (PTX) open-source stack. This report covers partner feedback on version 10.5 of the materials, released on 1 July 2026 as part of deliverable D4.6 (Work Package 4, project 101123471).

1.1. Goals of the training

The programme aims to give professionals the end-to-end knowledge to design, build and operate real data-space services, from concept to production. It follows the lifecycle of a data-space project: vision and use case, governance, data and semantics, technical architecture, implementation, and operational scaling.

Each of the three learning paths has its own goal:

Learning path	Intended audience	Goal
Project Manager (ES-01)	Project managers, product owners, business developers, ecosystem facilitators, public-sector decision-makers	Design, lead and scale a real data-space initiative from concept to operation
Data Scientist (ES-03), the "Data Expert" path in the survey	Data scientists and engineers, data architects, semantic modellers, ML engineers	Design and implement the semantic, data and analytics backbone of a data space
Developer (ES-02)	Software developers, solution architects, integrators, DevOps and security engineers	Build, integrate and operate compliant, scalable data-space infrastructure

Across all paths, the shared aim is a common vocabulary so that roles can work together. Project Managers should understand enough technology to lead, and developers should understand why semantics and governance matter.

The curriculum describes the programme as role-based and highly practical. Its planned teaching formats include case-based workshops, templates such as the Offering Definition Card, practical labs (connector configuration, Data Plane SDK integration, policy design) and cross-role exercises, with optional certification later. Each training traces one reference case end to end: Skill Gap Analytics across organisations.

1.2. Development and review process

The training materials were developed by DIO and Emprium GmbH, the partner responsible for the training task. AI tools supported the drafting of text and visuals. The materials are not the output of a single prompt: every version went through human review loops with EDGE-Skills partners and was revised by humans before the next iteration. Version 10.5, released on 1 July 2026, is the result of these iterations.

The materials were then presented to the consortium at the plenary meeting on 24 July 2026 and opened to a structured partner review. On 6 August a feedback form was sent to all partner organisations, asking for at least two responses per organisation, ideally from different roles. Reminders followed on 1 and 14 September, and responses were collected until 29 September. A first draft of this report was shared on 1 October and discussed with Inokufu and Prometheus-X; their comments are incorporated in this version.

1.3. What the package contains

Partners received seven files, all dated 1 July 2026 (v10.5):

Item	Format	Content
Curriculum	Word document, about 25 pages	Target groups and learning objectives, didactic model, the seven modules and their sub-topics, guidance per role, a learning matrix, the list of materials and a glossary
ES-01 Project Manager Training	20 slides + trainer script	A 90-minute session on PM-led onboarding: defining the offering, trust boundaries, governance, consent (PDI), catalogue registration, full-flow validation, failure patterns, decision gates and an Offering Definition Card exercise
ES-02 Developer Training	34 slides + trainer script	A 90-minute technical session: PDC connector, Data Planes, Identity Hub and Verifiable Credentials, ODRL policies, publishing and consuming data, VisionsTrust setup and Tech Space testing, multi-tenant deployment, end-to-end validation and DevOps
ES-03 Data Scientist Training	31 slides + trainer script	A 90-minute session on the data journey: ingestion, semantic standards (xAPI, JSON-LD, ESCO), transformation, catalogue metadata, quality, policies, publishing and consuming data, VisionsTrust access and consent flows, and privacy-preserving processing

The trainer scripts give the presenter slide-by-slide background and talking points. All three decks open with a shared foundation (PM slides 1–8, Developer and Data Scientist slides 1–13): the data-space definition from the DSSC Blueprint and ISO/IEC 20151, the PTX architecture, onboarding versus deployment, service chains and the reference case. They then split into role-specific content.

1.4. The seven modules

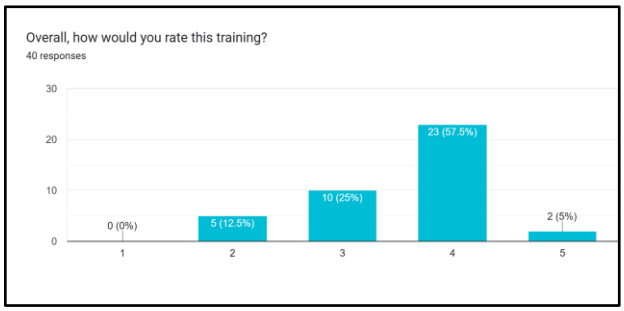
The curriculum organises the content into a shared foundation plus six modules, each with a different depth per role. The decks are not divided by module; instead, the curriculum points to the relevant slide ranges.

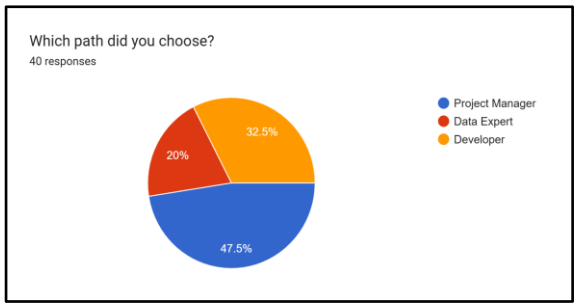
Module	Depth by role	Where it is covered in the decks
1. Foundations	Shared by all roles	PM 1–8 · Developer 1–13 · Data Scientist 1–13
2. Use Case and Value Creation	PM-led, all involved	PM 6–7, 10, 19
3. Governance and Trust	PM deep; Data and Dev practical	PM 12–13 · Developer 14–16
4. Data, Semantics and Analytics	Data deep; PM aware; Dev technical	Data Scientist 10–31
5. Technical Architecture and Building Blocks	Dev deep; Data supporting; PM overview	Developer 14–34
6. Implementation and Integration Journey	Hands-on, cross-functional	Developer 29–32 · Data Scientist 26–29
7. Operations and Scaling	PM and business deep; Dev technical; Data analytical	Developer 27 · Data Scientist 24

Two features of this mapping help explain the feedback that follows. Slide ranges overlap across modules (Developer slides 14–34 serve Modules 3, 5, 6 and 7), so readers must move between the curriculum and the decks to follow a module. Coverage is also uneven: Module 7, described as PM-deep, maps to one slide each in the Developer and Data Scientist decks and to none in the PM deck.

2. Executive summary

Partners found the PTX training materials relevant and clearly explained, and asked mainly for more practical, hands-on content: the overall rating is 3.6 out of 5, and practicality scored lowest at 2.9.





- Reach: 40 responses from 22 partner organisations, collected 6 August to 29 September 2026 (19 Project Managers, 13 Developers, 8 Data Experts).
- Strengths: relevance (4.0) and clarity (3.9) scored highest, with 75% and 73% of respondents giving 4 or 5. Slide readability (3.9) and logical flow (3.9) were also rated well.
- Overall reception: 63% rated the training 4 or 5 overall. Only 5 of 40 respondents rated it below 3, and none gave the lowest score.
- Format fit: 80% said the time investment was just right, and 70% found the structure (shared foundation + 6 modules) clear.
- Main area for improvement: : only 30% rated the modules as practical or hands-on (4–5), while 35% rated them 1–2.
- Advocacy: 17 respondents would recommend the training, 17 might, and 6 would not.
- Developer path: Developers, who expect code-level examples, gave the lowest overall rating (3.4), with practical examples at 2.8 and practicality at 2.5.

The most frequent request, raised in 16 of 33 substantive comments, is concrete hands-on content: end-to-end worked examples, real requests and payloads, and exercises. Next come screenshots or short demos of the platform (10 comments), undefined acronyms and better integrated glossary (7), and difficulty mapping the curriculum to the slide decks (4).

Top priorities: add one reproducible end-to-end example per path; show the platform through screenshots and short demos; label every slide by module and add a glossary; give Project Managers templates and realistic failure scenarios; and move towards a more interactive format.

2.1. Survey method and respondents

40 responses were collected through a Google Form between 6 August and 29 September 2026, from 22 partner organisations. The survey was the partner stage of a longer review process (see Development and review process). Each respondent reviewed the materials for one learning path and answered 1–5 rating questions, multiple-choice questions and three open questions.

Learning path	Responses	Share	Heard of data spaces only	Worked in a data-space project	Work hands-on regularly
Project Manager	19	48%	3	14	2
Developer	13	33%	5	5	3
Data Expert	8	20%	3	3	2
Total	40	100%	11	22	7

Most respondents (55%) had worked in a project involving a data space, so results mainly reflect an informed partner audience rather than true beginners. Only 7 respondents work hands-on with data spaces regularly.

All results are anonymised. Two people reviewed two paths each, and both of their submissions are counted as separate path reviews. The full list of data-handling choices is in the appendix.

2.2. Overall results

Respondents rate the training as relevant and clear, with practicality as the main area for improvement: 63% gave an overall rating of 4 or 5, while 30% found the modules practical or hands-on.

Measure	1 (lowest)	2	3	4	5 (highest)	Average	Rated 4–5
Relevance to role	0	4	6	17	13	4.0	75%
Clarity of concepts	0	4	7	19	10	3.9	73%
Overall rating	0	5	10	23	2	3.6	63%
Practical / hands-on	2	12	14	11	1	2.9	30%

Number of respondents giving each rating (n = 40). Average = mean of all 40 ratings.

Question	Answers (n = 40)
Time investment	Just right 32 (80%) · Too long 6 (15%) · Too short 2 (5%)
Would recommend to colleagues	Yes 17 (43%) · Maybe 17 (43%) · No 6 (15%)
Structure (shared foundation + 6 modules) clear	Yes 28 (70%) · Partially 10 (25%) · No 2 (5%)
Level of training for your role (1–5)	2: 5 (13%) · 3: 23 (58%) · 4: 10 (25%) · 5: 2 (5%)

Willingness to recommend follows the overall rating closely. 16 of the 17 who would recommend rated the training 4 or 5, while 5 of the 6 who would not rated it 2 or 3. The 17 "maybe" respondents are split (8 rated it 4, 9 rated it 2 or 3), and they are the group most likely to be won over by more practical content.

On level, 58% chose the midpoint and only 2 respondents chose 5, which suggests the pitch is broadly right if 3 means "appropriate". Time investment was a concern mainly for newcomers: 5 of the 6 "too long" answers came from respondents who had never worked with a data space.

3. Results by learning path

The Developer path has the most room for improvement: Developers gave the lowest mean score on 6 of 8 measures, and their rating of practical examples (2.8) is a full point below that of Project Managers (3.8).

Measure	Project Manager (n = 19)	Developer (n = 13)	Data Expert (n = 8)	Developer vs best other path
Relevance to role	4.0	4.0	3.9	tied top
Clarity of concepts	3.8	3.7	4.4	−0.7
Slides: clarity	3.9	3.5	4.4	−0.9
Structure and flow	3.8	3.8	4.0	−0.2
Diagrams	3.7	3.3	3.9	−0.6
Overall rating	3.6	3.4	3.6	−0.2
Practical examples	3.8	2.8	3.4	−1.0
Practical / hands-on	3.2	2.5	2.9	−0.7

Average rating per path, 1 (lowest) to 5 (highest). Gaps of 0.5 or more in bold; gaps are calculated before rounding.

- Project Managers are the most satisfied group: 10 of 19 would recommend the training, and they rated practical examples highest. Their comments still ask for more depth on running real multi-partner projects.
- Developers set the highest bar for hands-on content: 4 of 13 would recommend and 3 would not, and 6 of 13 found the structure only partly clear. Their comments consistently ask for code-level, reproducible examples.
- Data Experts rated slides and clarity highest of any group (both 4.4), and would like more practical content (2.9). Only 3 of 8 would recommend.

Prior experience matters too. The 7 respondents who work hands-on with data spaces regularly gave the lowest overall rating (3.1) and practicality score (2.6), and only 1 of them would recommend the training. Experienced practitioners would benefit from additional technical depth.

3.1. Structure and modules

The modular structure works for most, and each module is valued mainly by the path it was designed for. 70% found the structure clear, and Module 5 (Technical Architecture) was named most helpful most often (10 respondents).

Module	Most helpful (total)	Most helpful: PM / Dev / Data Expert	Least helpful (total)	Least helpful: PM / Dev / Data Expert
1. Foundations (shared)	7	4 / 3 / 0	3	1 / 1 / 1
2. Use Case and Value Creation	7	7 / 0 / 0	6	1 / 1 / 4
3. Governance and Trust	2	2 / 0 / 0	3	2 / 1 / 0
4. Data, Semantics and Analytics	5	1 / 0 / 4	3	2 / 1 / 0
5. Technical Architecture	10	1 / 6 / 3	6	5 / 1 / 0
6. Implementation and Integration	3	1 / 2 / 0	2	0 / 1 / 1
7. Operations and Scaling	1	1 / 0 / 0	4	0 / 3 / 1
None named	5	2 / 2 / 1	13	8 / 4 / 1
Total	40	19 / 13 / 8	40	19 / 13 / 8

Number of respondents naming each module, split by learning path.

- Module 5 was most helpful for 6 of 13 Developers and 3 of 8 Data Experts, but least helpful for 5 Project Managers.
- Module 2 (Use Case and Value Creation) was most helpful for 7 Project Managers and least helpful for 4 of 8 Data Experts.
- Module 4 (Data, Semantics, Analytics) was most helpful for half of the Data Experts.
- Module 7 (Operations and Scaling) drew the fewest positive mentions (1) and was least helpful for 3 Developers.
- 13 respondents named no least-helpful module, a sign that few modules are seen as weak overall.

The negative votes mostly reflect role fit rather than weak content: modules pitched at other roles feel less useful. This supports keeping role-specific depth, but it also makes clear signposting more important. Structure was only partly clear for 9 of 21 Developers and Data Experts, and several respondents said they could not tell which slides belong to which module without going back and forth to the curriculum PDF.

3.2. Quality of the materials

Slides are readable and logically ordered, while diagrams and practical examples leave room for improvement: 78% rated slide clarity 4 or 5, against 53% for practical examples.

Aspect	1 (lowest)	2	3	4	5 (highest)	Average	Rated 4–5
Slides: clarity and readability	1	4	4	21	10	3.9	78%
Structure and logical flow	0	5	7	16	12	3.9	70%
Diagrams and visualisations	3	2	12	14	9	3.6	58%
Practical examples	3	3	13	18	3	3.4	53%

Number of respondents giving each rating (n = 40). Average = mean of all 40 ratings.

The lower scores come mainly from Developers (see Results by learning path), and the written feedback explains them. Some respondents found the slides text-heavy: one

Developer noted that concepts take several slides of words where a single picture would do. Several respondents also flagged undefined acronyms, missing slide numbers and images that look decorative.

Five respondents said the decks look AI-generated, citing repetition, bullet-heavy slides, unusual images and grammar slips. AI tools were indeed used to support drafting, as is now common practice, and all content went through several rounds of human review (see Development and review process). The comments show that further editorial polish would make this review work more visible and strengthen confidence in content that is otherwise rated relevant and clear.

On diagrams, respondents asked for one overarching picture of the core data-space components and the data flow between them, and for more visuals of the PDC architecture, installation and configuration. On the positive side, the Skill Gap Analytics reference case was singled out for making the concepts easy to follow.

4. Qualitative feedback

Almost half of the substantive comments (16 of 33) ask for hands-on, end-to-end examples: respondents would like the materials to show not only what needs to happen, but also how to do it.

Theme	Answers mentioning it	Share of 33 answers
Hands-on, end-to-end examples	16	48%
Platform screenshots and demos	10	30%
Undefined terms, need for a glossary	7	21%
More and better visuals	7	21%
Interactive format, video, quizzes	6	18%
Deeper Project Manager content	5	15%
Slide polish, AI-generated look	5	15%
Mapping modules to slides	4	12%
Inaccurate or inconsistent content	4	12%
Translation, starting-level check	2	6%

One answer can mention several themes, so shares add up to more than 100%.

4.1. Hands-on, end-to-end examples

This is the strongest and most consistent message, especially from Developers and Data Experts.

"Any developer expects a 'Hello World!' type of an example, but there were none." — Developer

"It was extremely theoretical, it is needed something very tangible to know how to actually do the things in the dataspace." — Data Expert

In this first version, the depth of technical exercises was limited by the available resources and by the continuous evolution of the PTX components during development. Specific requests for further development include:

- one reproducible walk-through from setup to publishing an offering, discovery, negotiation and data transfer, using cURL requests with headers, bodies and expected responses;
- a worked example of plugging an existing third-party service into the data space as a service provider, not only a data provider;
- Module 4 semantics tied to a real payload through the connector, with before/after JSON;
- SDKs, a sandbox or hands-on lab, and small end-to-end exercises;
- a second real-world use case and exercises beyond the Offering Definition Card.

4.2. Platform screenshots and demos

Ten answers ask to see the actual tools: screenshots of the Catalog, the VisionsTrust dashboard and PDC settings, a two-minute video of steps 1 to 7, and an end-to-end demo with VisionsTrust and a notebook. Several respondents linked this directly to the practicality gap: seeing the screens would make the steps concrete even without a live lab.

4.3. Terminology and visuals

Seven answers flag undefined acronyms and technical terms (DCP, PDC, PDI, ODRL, VCs, DIDs) and ask for a glossary or reference links. The curriculum already contains a glossary, but it is not yet integrated into the slide decks. Seven answers ask for more and better visuals: fewer bullet points, one overarching architecture diagram, flow diagrams in place of text, and meaningful images instead of decorative ones.

4.4. Format and interactivity

Six answers question the static PDF and PowerPoint format itself.

> *"The complete format. PowerPoint is not attractive, you lose 80% of the target."*
> — Project Manager

Suggestions include an online platform with progress tracking, short videos, quick self-tests after each module, content that can be skimmed or explored in depth, and game elements in the use-case section. One respondent, who reviewed two paths, asked for materials in learners' native languages and for an assessment of each learner's starting level.

4.5. Depth of the Project Manager path

Five Project Managers would like their path to go further into real project work . One summarised the gap as follows: the training explains the ideal onboarding process, but not how to manage a real multi-party project when components differ in maturity or things go wrong. Requests include:

- roles and responsibilities across organisations, and multi-partner coordination (incentives, delays, partner changes, escalation paths);
- a readiness scale for offerings, from conceptual to production-ready;
- basic technical literacy for PMs, service-chain failure scenarios, and incident and escalation management;
- reusable templates and exercises on stakeholder mapping, governance decisions, risk and contract or policy definition;
- end-user adoption and realistic effort planning for onboarding.

Some respondents also asked for a clearer description of what a PM is concretely expected to do when joining the data space.

4.6. Navigation between curriculum and decks

Four answers describe difficulty working out which slides belong to which module. The curriculum references slides in three role-based decks that do not themselves label the modules, so readers switched back and forth between documents. One Developer also noted that steps that belong together are split across modules.

4.7. Accuracy and consistency

Four answers point to content that needs updating or alignment:

- the reference use case is no longer valid in the project for one of the partners it features;
- the Query Parameters wiki page and the newer Service Chains page describe parameter passing differently;
- "data stays at the source" needs to be reconciled with the described authorised peer-to-peer transfer;
- "governance before technology" is presented too absolutely; one PM argued for technical prototypes before governance is frozen.

4.8. What works

Four respondents said nothing was missing, including one who called the coverage complete. Others praised the relevance of the content, and a Developer with prior experience found the material clear and consistent. The Skill Gap Analytics reference case was highlighted as making the concepts easy to follow.

5. Recommendations

The content is judged relevant and sound for a first version. The main gap lies in the practical part, i.e. in showing how to do things. As this report is the final deliverable of the training task in EDGE Skills, the following nine recommendations are intended for external exploitation: they can guide partners and other organisations that further develop, adapt or reuse the materials after the project.

1. **Introduce terminology.** Create an introductory short course to define foundational acronyms (e.g. DCP, PDC, PDI, ODRL, VCs, DIDs). Distill the existing glossary into a one-page overview of PTX data-space terms, integrate it directly into the training material and link each term to its reference page. Raised in 7 comments.
2. **Make the modules visible.** Put the module number on every slide and open each deck with a module-to-slide map, so the curriculum and the decks can be read together. Raised in 4 comments; 9 of 21 Developers and Data Experts found the structure only partly clear.
3. **Polish the slides.** Fix the slide-level issues listed in the appendix, add slide numbers and a closing slide with further links, replace decorative images, remove duplication and check grammar.
4. **Fix inconsistencies.** Update the reference use case, align the query-parameter description with the latest Service Chains documentation, clarify "data stays at the source" against peer-to-peer transfer, and present "governance before technology" as a principle rather than a strict sequence.
5. **Add one reproducible end-to-end example per path.** Raised in 16 comments, this is the single biggest lever.
    - Developers: setup, publishing an offering, discovery, negotiation and data transfer, with cURL requests, headers, JSON payloads, expected responses and common errors.
    - Data Experts: each semantic concept in Module 4 tied to a real payload through the connector, with a before/after JSON example.
    - Project Managers: a guided walk-through of the Catalog, creating an offering and a use case, adding providers and building a service chain.

6. **Show the platform.** Add screenshots of the VisionsTrust catalog, dashboard and PDC configuration, and a short (about 2-minute) video of steps 1 to 7. Raised in 10 comments.
7. **Deepen the Project Manager path.** Add reusable templates (service-chain map, readiness register, data/API contract checklist, governance matrix, sample ODRL policy, acceptance checklist, incident and escalation record, onboarding KPIs), plus multi-partner coordination and a realistic failure scenario. Raised in 5 comments.
8. **Add practice and self-checks.** A short quiz per module, exercises beyond the Offering Definition Card and, for Developers, a sandbox or hands-on lab.
9. **Move towards an interactive format.** An online learning path with progress tracking, short videos and quizzes would suit the audience better than static PDF and PowerPoint. Raised in 6 comments; one respondent also asked for translations into partner languages.

This report is the final deliverable of the training task within EDGE Skills. Its recommendations are therefore intended for external exploitation: they can guide partners and other organisations that further develop, adapt or reuse the materials after the project.

Appendix

A. Training materials reviewed

Version 10.5, released on 1 July 2026 (D4.6): Curriculum · ES-01 Project Manager Training · ES-02 Developer Training · ES-03 Data Scientist Training

B. Data handling

- 40 path reviews from 22 partner organisations, collected via Google Forms from 6 August to 29 September 2026.
- All results are anonymised. Quotes are attributed to the learning path only and reproduced as written.
- Averages are means on a 1–5 scale. Percentages are rounded, so totals may not add up to exactly 100%.
- 33 open answers with substantive feedback were grouped into themes by hand; one answer can mention several themes.

C. Survey data

Anonymised dataset (closed answers only, without organisation names or free text)