

WP3-A8. Izvješće vanjskog stručnjaka za WP3.



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Transilvania
University
of Brasov





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1. UVOD

Ovaj dokument predstavlja rezultate aktivnosti WP3-A8 pod nazivom *"Vanjski stručni izvještaj o rezultatima WP3"*, koja je dio *Radnog paketa 3: "Nastavni materijali za interdisciplinarno upravljanje otpadom temeljenim na blockchainu u sektoru ukrasnog kamena."*

UNITBv je angažirao stručnjaka iz RoGBC-a (Rumunjsko vijeće za zelenu gradnju) za procjenu sadržaja WP3.

Izvješće je saželo neovisnu pedagošku i tehničku reviziju koju je proveo ovaj vanjski stručnjak imenovan putem UNITBv-a. Procjena se usredotočila na kvalitetu, unutarnju dosljednost i europsku relevantnost izlaza WP3, kao i njihovu praktičnu upotrebljivost za odrasle učenike, osobito profesionalce starije od 45 godina, te pružatelje edukacije unutar lanca vrijednosti ukrasnog kamena.

Kao dio pregleda, vanjski stručnjak pregledao je sve WP3 isporuke (WP3-A1 do WP3-A7), uključujući komparativne studije, materijale za obuku i e-Priručnik, zajedno sa svim dostupnim jezičnim verzijama.

Povratne informacije prikupljene su putem strukturiranog upitnika osmišljenog za potvrdu robusnosti obavljenog rada, isticanje eventualnih nedostataka ili nedosljednosti te predlaganje praktičnih, primjenjivih poboljšanja za nadolazeće faze implementacije i pilot faze.

2. UPITNIK EVALUACIJE

Upitnik korišten za vanjski pregled WP3 bio je sljedeći:

RockChain. Evaluation of WP3: Learning materials for interdisciplinary Blockchain-Rock Ornamental Waste Management

TRANSVERSAL TECHNOLOGICAL SKILLS FOR THE ORNAMENTAL ROCK INDUSTRY
FOCUSING ON THE
APPLICABILITY OF BLOCKCHAIN IN A CIRCULAR ECONOMY
REFERENCE: 2023-1-DE02-KA220-ADU-000166863

mcarlitos.146@gmail.com [Cambiar de cuenta](#)



 No compartido

* Indica que la pregunta es obligatoria



Organisation: *

- ☐ Deutscher Naturwerkstein-Verband e.V. (DNV)
- ☐ Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales (CTM)
- ☐ Universitatea Transilvania din Brasov (UNITbv)
- ☐ Klesarska skola (KSK)

1. Overall, how satisfied were you with the management and development of the WP3 (Work Package 3): Learning materials for interdisciplinary Blockchain-Rock Ornamental Waste Management?

	1	2	3	4	5	
Not satisfied at all	☐	☐	☐	☐	☐	Very satisfied

2. Comparative study of Rock Ornamental Waste management regulations in each country. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The comparative study on Rock Ornamental Waste Management regulations in the participating countries was comprehensive.	☐	☐	☐	☐	☐
Differences in Rock Ornamental Waste management regulations between the participating countries were clearly identified.	☐	☐	☐	☐	☐
The study provided a clear picture of how Rock Ornamental Waste management is regulated in different national contexts.	☐	☐	☐	☐	☐
The results of the study were useful for adapting the project strategies at the European level.	☐	☐	☐	☐	☐

3. Comparative study of information technologies applied to waste management at international level in stone sector. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The comparative study was comprehensive.	☐	☐	☐	☐	☐
Differences between countries were clearly identified.	☐	☐	☐	☐	☐
The results of the study were useful for adapting the project strategies at the European level.	☐	☐	☐	☐	☐

4. Develop of training Material for e-Handbook based on the curricula. Please rate the following aspects.

Fully disagree Rather disagree Neither agree nor disagree Rather agree Fully agree

The production of the e-Handbook was effectively completed.

☐
☐
☐
☐
☐

The contents of the training material were clear and aligned with the educational objectives.

☐
☐
☐
☐
☐

The training material was useful and adequate for teaching the concepts defined in the curriculum.

☐
☐
☐
☐
☐

5. eHandbook of Circular Economy strategies applied to Rock Ornamental Waste Management using Blockchain technologies. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The production of the e-Handbook was effectively completed.	☐	☐	☐	☐	☐
The e-Handbook covered all relevant aspects defined in the project.	☐	☐	☐	☐	☐
The structure and design of the e-Handbook facilitated the understanding of the topics covered.	☐	☐	☐	☐	☐
The e-Handbook was a useful tool for disseminating the knowledge acquired.	☐	☐	☐	☐	☐

6. Translations of the e-Handbook in all partners' languages. Please rate the following aspects.

Fully disagree Rather disagree Neither agree nor disagree Rather agree Fully agree

The quality of the translations facilitated the understanding of the results in all participating countries.

☐
☐
☐
☐
☐

All translations were done in a timely manner and within the established deadlines.

☐
☐
☐
☐
☐

The translation of the results contributed to better communication between the project partners.

☐
☐
☐
☐
☐

7. Participation in a congress to disseminate the results of WP3. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The participation in the congress was well prepared.	☐	☐	☐	☐	☐
The project results of WP3 were clearly presented.	☐	☐	☐	☐	☐
The dissemination activities carried out at the congress were effective.	☐	☐	☐	☐	☐
The participation increased the visibility of the project at the European level.	☐	☐	☐	☐	☐

8. Second International Seminar in Brasov (Romania). Please rate the following aspects.

Fully disagree Rather disagree Neither agree nor disagree Rather agree Fully agree

The Second international seminar in Brasov was organised effectively.

☐
☐
☐
☐
☐

The topics addressed at the seminar were relevant and aligned with the project objectives.

☐
☐
☐
☐
☐

The organisation and logistics of the seminar were adequate to encourage participation.

☐
☐
☐
☐
☐

9. External expert report of WP3 Results. Please rate the following aspects.

Fully disagree Rather disagree Neither agree nor disagree Rather agree Fully agree

The external expert's report on the results of WP3 provided an objective and detailed assessment.

☐ ☐ ☐ ☐ ☐

The recommendations of the external expert were clear and applicable for the improvement of the project.

☐ ☐ ☐ ☐ ☐

The report highlighted strengths and areas for improvement in the results obtained in WP3.

☐ ☐ ☐ ☐ ☐

The external evaluation was useful to validate the quality and effectiveness of the WP3 results.

☐ ☐ ☐ ☐ ☐

10. Remarks. Please add any comments you consider appropriate about the tasks developed in this WP3.

Tu respuesta

11. Please, tell us what kind of improvement you can suggest for the WP3:

Tu respuesta



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Enviar

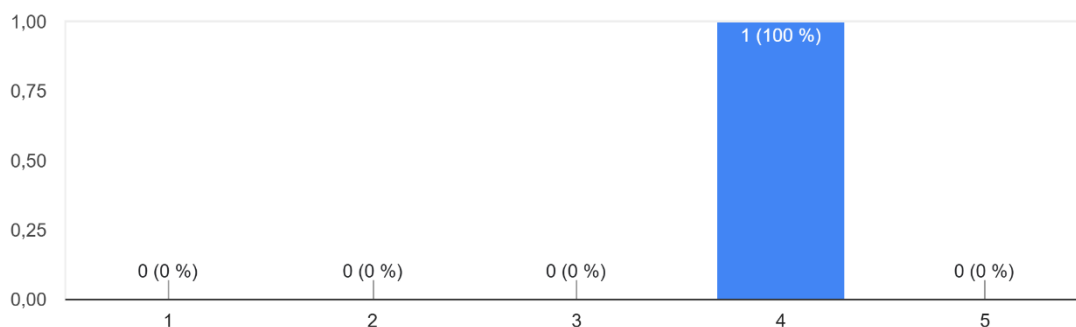
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3. ODGOVORI

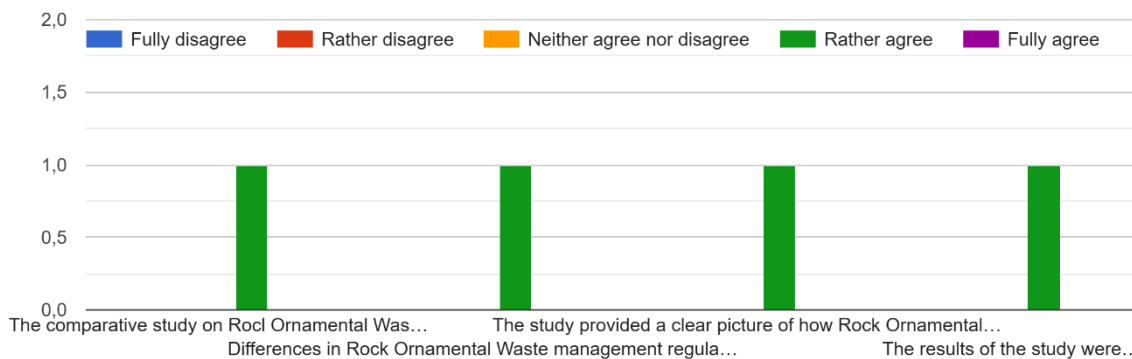
Odgovori na anketu za WP2 prikazani su u nastavku (tiskani ekrani pisanih odgovora i grafički prikaz ocjena):

1. Overall, how satisfied were you with the management and development of the WP3 (Work Package 3): Learning materials for interdisciplinary Blockchain-Rock Ornamental Waste Management?

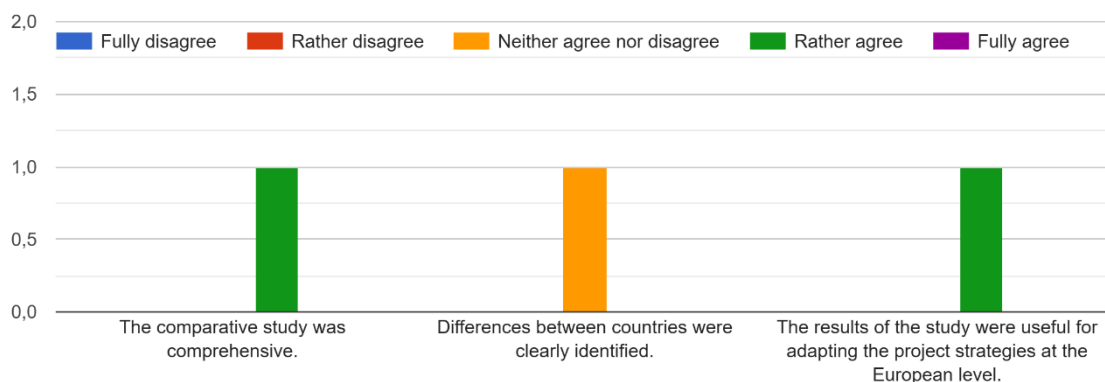
1 respuesta



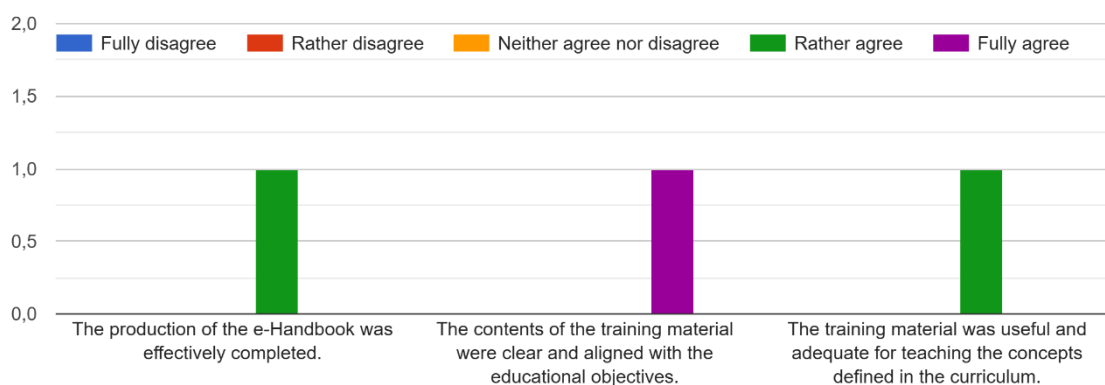
2. Comparative study of Rock Ornamental Waste management regulations in each country. Please rate the following aspects.



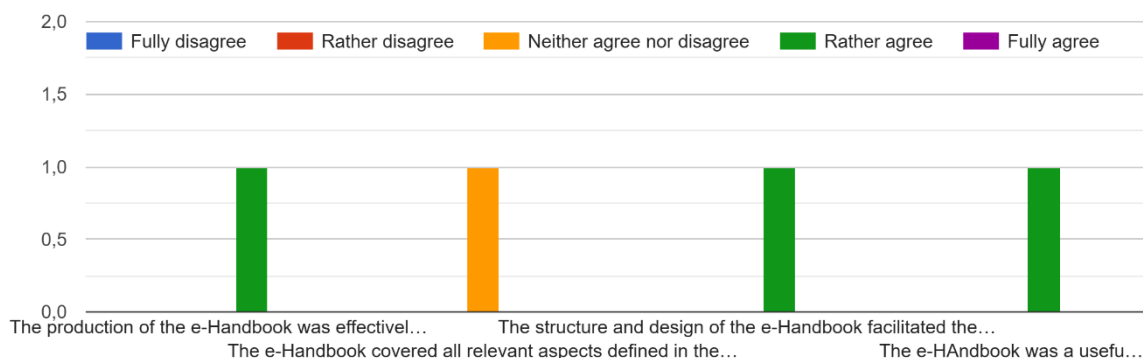
3. Comparative study of information technologies applied to waste management at international level in stone sector. Please rate the following aspects.



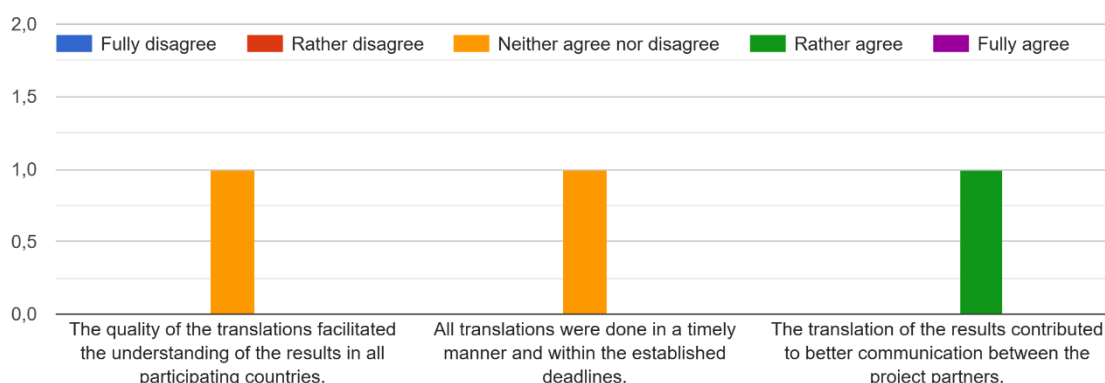
4. Develop of training Material for e-Handbook based on the curricula. Please rate the following aspects.



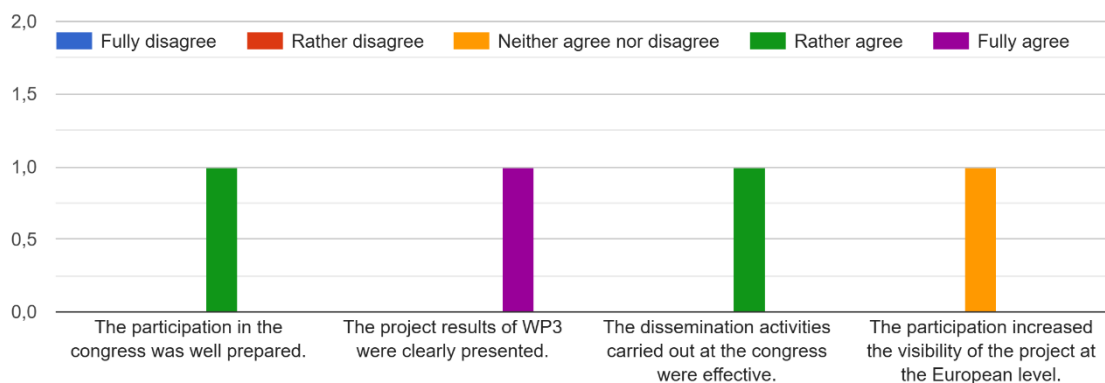
5. eHandbook of Circular Economy strategies applied to Rock Ornamental Waste Management using Blockchain technologies. Please rate the following aspects.



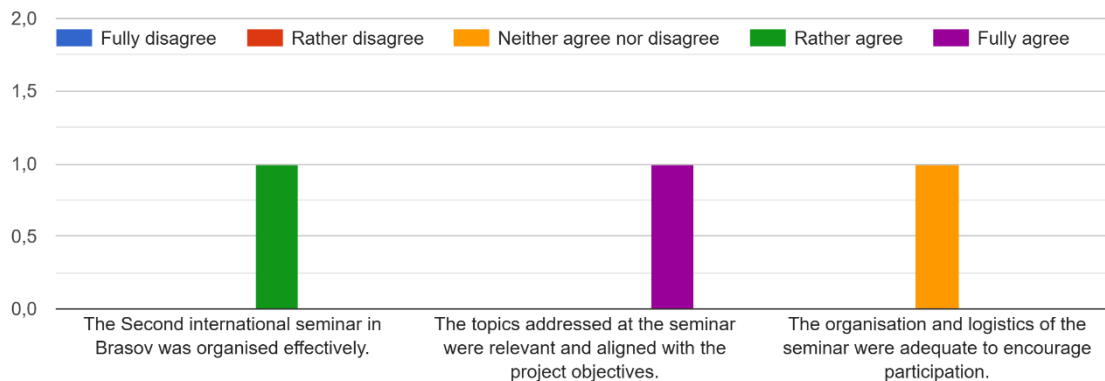
6. Translations of the e-Handbook in all partners' languages. Please rate the following aspects.



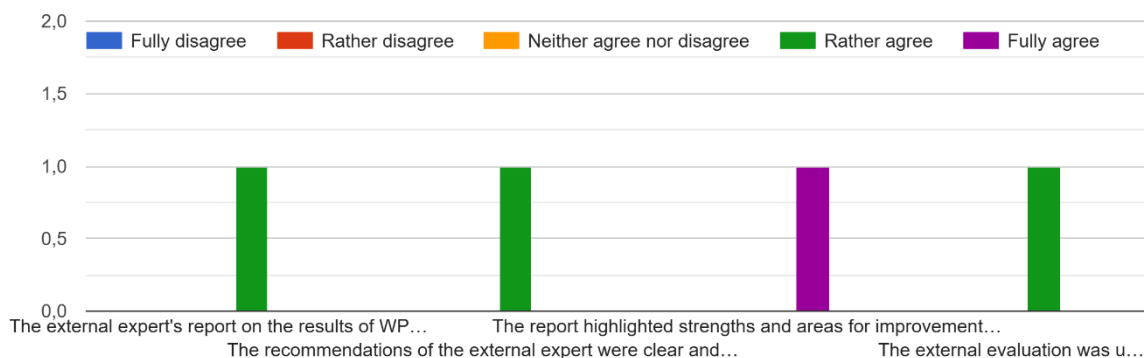
7. Participation in a congress to disseminate the results of WP3. Please rate the following aspects.



8. Second International Seminar in Brasov (Romania). Please rate the following aspects.



9. External expert report of WP3 Results. Please rate the following aspects.



10. Remarks. Please add any comments you consider appropriate about the tasks developed in this WP3.

1 respuesta

WP3 provides a strong backbone for the overall project, effectively linking three key dimensions:

1. the current regulatory landscape,
2. digital solutions for traceability, and
3. a structured training package suitable for adult education contexts.

The comparative approach is appropriate, and the dissemination efforts—including conference presentations and the seminar—contribute positively to the project's credibility and future uptake.

That said, several elements still reflect a "prototype-stage" status from an implementation point of view. While the regulatory and IT studies are solid in terms of desk research, their impact would be significantly enhanced by translating them into practical, real-world scenarios specific to the ornamental stone value chain. This could include step-by-step waste classification guides, clear end-of-waste process pathways, and traceability workflows that are easy to understand for adult learners with no prior exposure to these topics.

Dissemination and translation activities would also benefit from stronger measurability and consistency—for example, by adding indicators related to reach, stakeholder profiles, and adoption intent. A clear editorial pass across outputs (to harmonize terminology, dates, and formatting) would further improve the professional quality and usability of the materials.

In summary, WP3 is fit for purpose, but its classroom readiness and broader stakeholder transferability will depend on the integration of more concrete micro-cases, visual process maps, and stronger evidence of actual or anticipated impact.

11. Please, tell us what kind of improvement you can suggest for the WP3:

1 respuesta

Add 3–5 micro-cases (one from each partner country) that walk through practical examples: starting from the waste type, then code/classification, treatment route, required documentation, and finally the traceability steps. This would ground the content in real contexts and make it easier to apply.

Include a glossary covering both technical terminology and blockchain fundamentals, and ensure consistent use of key terms across all language versions to support clarity and alignment.

Strengthen the connection between the desk research and training materials by adding "What this means for trainers/learners" boxes and practical checklists that translate findings into actionable classroom guidance.

Introduce dissemination KPIs, such as audience size, participant profiles, qualitative feedback, and follow-up actions. Also, maintain an audit-ready record of outputs, with clear documentation of dates, deliverables, and version history.

Enhance accessibility by providing simplified language options, increasing the use of visuals and process diagrams, and including specific trainer guidance for managing groups with mixed levels of digital or technical ability.

4. ZAKLJUČCI

Vanjska evaluacija dodijelila je ukupnu ocjenu zadovoljstva 4 od 5, što pokazuje da WP3 pruža koherentan i uglavnom zreo skup obrazovnih resursa koji učinkovito podržavaju RockChain europski put obuke.

Vanjski stručnjak smatra WP3 snažnom okosnicom za RockChain jer uspješno povezuje tri ključne dimenzije:

- (1) Regulatorni okvir;
- (2) Rješenja za digitalnu sljedivost, i;
- (3) strukturirani paket obuke prikladan za obrazovanje odraslih.

Stručnjak je također potvrdio da je komparativni pristup prikladan te da akcije širenja informacija (prezentacije na konferencijama i međunarodni seminar) jačaju vjerodostojnost i podržavaju buduće prihvaćanje.

Ključne snage identificirane kroz WP3 isporuke uključivale su:

- Relevantnost odabranih tema, poput regulacije otpada, strategija kružnog gospodarstva i digitalne sljedivosti, u kontekstu lanca vrijednosti ukrasnog kamena.
- Jasnoća i usklađenost puta učenja s WP2 RockChain kurikulumom, omogućujući integriranu primjenu u obrazovnim i obrazovnim ustanovama za odrasle i visokom obrazovanju.
- Praktična orijentacija e-Priručnika i jedinica za učenje, koje podržavaju i vođene sesije i samostalno učenje.
- Dodatna vrijednost aktivnosti diseminacije, uključujući doprinose konferencijama i seminar održan u Braşovu, koji su pomogli povećati vidljivost i angažman dionika.

Unatoč ukupnoj zrelosti WP3, recenzija ukazuje na nekoliko potrebnih poboljšanja

Prioritetne preporuke WP3:

- Stručnjak je preporučio dodavanje 3–5 mikro-slučajeva (idealno po jednoj partnerskoj zemlji) koji polaznike vode kroz punu praktičnu rutu.
- Stručnjak je preporučio uključivanje rječnika koji pokriva i tehničku terminologiju i osnove blockchaina, osiguravajući dosljednu upotrebu ključnih pojmova u svim verzijama jezika.

- Stručnjak je preporučio jačanje veze između istraživanja za stolom i materijala za obuku.
- Stručnjak je preporučio uvođenje KPI-jeva za širenje (veličina publike, profili sudionika, kvalitativne povratne informacije, daljnje akcije) i vođenje evidencije rezultata spremne za reviziju s jasnom dokumentacijom datuma, isporuka i povijesti verzija.
- Stručnjak je preporučio poboljšanje pristupačnosti pružanjem pojednostavljenih jezičnih opcija, povećanjem korištenja vizuala i dijagrama procesa te dodavanjem specifičnih smjernica za trenere za grupe s kombiniranim digitalnim ili tehničkim sposobnostima.

Provedba preporuka u WP3:

Predložena poboljšanja bila su usmjerena i ne zahtijevaju velike preinake. Umjesto toga, namijenjene su poboljšanju jasnoće, inkluzivnosti i praktične primjene u različitim europskim okruženjima za obuku.

1. 3–5 praktičnih mikro-slučajeva (prizemljenje istraživanja za stolom): WP3 izlazi su ojačani stvarnim primjerima i materijalima za studije slučaja koji su polaznike vodili kroz realne primjene digitalnog upravljanja otpadom i sljedivosti. To se odrazilo u IT komparativnoj studiji (WP3-A2), koja je uključivala eksplicitne reference iz studija slučaja (npr. velike implementacije pametnog otpada i primjere digitalizacije relevantne za sektor) te raspravu vođenu scenarijima o primjenjivosti na tokove otpada i sljedivosti. Isti "pristup temeljen na slučajevima" zatim je prenesen u materijale za obuku (Jedinice, posebno Jedinica 4) i integrativnu praktičnu vježbu, gdje su polaznici vođeni kroz primijenjene radne tokove umjesto apstraktnih opisa. Videozapisi i dodatni materijali također su uključeni u svaku nastavnu jedinicu online tečaja na OER platformi, kao podrška studentima i pružanje praktičnih slučajeva.
2. Dosljednost rječnika / terminologije među jezicima: Iako WP3 nije se oslanjao na čisto teorijske definicije, standardizirao je osnovnu terminologiju kroz ugrađene definicijske sekcije i ponovljenu upotrebu ključnih koncepata (npr. definicije blockchaina, pametnih ugovora i primitiva za praćenje u jedinici 2, te dosljedan jezik "sljedivosti" kroz WP3 materijale). Ova okosnica terminologije podržavala je prijevode i višejezičnu ponovnu upotrebu predviđenu u WP3 (WP3-A5), smanjujući nejasnoće za odrasle učenike i trenere. Dodatni materijali također su uključeni u svaku nastavnu jedinicu online tečaja na OER platformi kako bi se učenicima pomoglo bolje razumjeti pojmove i pojmove te im se pružilo više alata za učenje.
1. "Što to znači u praksi" za trenere i polaznike: WP3-A1 i WP3-A2 nisu ostavljeni kao samostalno tablično istraživanje. Njihovi su nalazi primijenjeni u sadržaj usmjeren na obuku kroz strukturirane obrazovne jedinice i aktivnosti: (i) studija propisa (WP3-A1) učinila je regulatornu logiku primjenjivom pojašnjenjem na klasifikacija otpada i putovi prestanka otpada, te (ii) jedinice za obuku pretvorile

su te uvide u korak-po-korak sekvence učenja i primijenjene zadatke (posebno u Jedinici 4, koja se izričito fokusirala na to kako koraci praćenja i dokumentacija funkcioniraju u praksi).

- KPI-jevi za širenje, mjerljivost i zapisi spremni za reviziju: WP3 distribucija dokumentirana je u formatu spremnijem za reviziju putem WP3-A6, koji je bilježio konkretne izlaze za distribuciju (naslove, tip, datume, status i kanal) te pružao reference/poveznice gdje je to bilo relevantno. Ovo se izravno odnosilo na preporuku za poboljšanje dosljednosti, sljedivosti izlaza i dokaza o doseg/prihvatanju.
- Pristupačnost i snažnija upotreba vizualnih/procesnih dijagrama: WP3 nastavni materijali isporučivani su u formatima koji podržavaju odrasle učenike s mješovitim digitalnim samopouzdanjem, uključujući strukturirane jedinice s jasnim sekcijama i opsežnom vizualnom podrškom (slike/dijagrami) te komplementarne prezentacije slajdova (jedinice PPTX). To je povećalo čitljivost i podržalo isporuku trenera u grupama mješovitih sposobnosti.