European Approach for Quality Assurance of Joint Programmes

EVALUATION REPORT

Erasmus Mundus Master of Science in Imaging and Light in Extended Reality (IMLEX)

University of Eastern Finland (Finland)
KU Leuven (Belgium)
Université Jean Monnet (France)
Toyohashi University of Technology (Japan)

FEBRUARY 2026

Rapport publié le 16/02/2026

High Council for the evaluation of research and higher education

The consortium of the **Master of Science in Imaging and Light in Extended Reality (IMLEX),** through the University of Eastern Finland as main coordinator, has mandated the Hcéres to carry out the evaluation of its Joint Master's programme. The evaluation is based on the "European Approach for Quality Assurance of Joint Programmes", adopted in May 2015 by European Higher Education Area Ministers. These standards are available on the Hcéres website (hceres.fr).

In the name of the expert panel[1]:

David FOFI, chair

In the name of Hcéres[1]:

Coralie CHEVALLIER, President

[1]In accordance with articles R. 114-15 and R. 114-10 of the Research Code, evaluation reports are signed by the chair of the expert panel and countersigned by the President of Hcéres.

CONTENTS

I- STUDY PROGRAMME IDENTITY SHEET

Study programme name: Erasmus Mundus Master of Science in Imaging and Light in Extended Reality (IMLEX)

Speciality: Master of Science (MSc), situated in the field of Informatics / Computer Science, Physics / Photonics, Science / Engineering and Technology, Industrial Sciences and Technology, EQF level 7
ISCED code: "0610 – Information and Communication Technologies (ICT)"

Year of creation and context: Start of current EMJM project in 01/10/2024. Has started as an Erasmus Mundus Joint Master Degree Partnerships with Japan, call for proposals published by the European Commission on 24 October 2018. Date of introduction: academic year 2020-2021.

Sites where the programme is taught:
- Finland: Joensuu
- Japan: Toyohashi
- France: Saint-Etienne
- Belgium: Ghent

Partner institutions:
- University of Eastern Finland (UEF), Joensuu, Finland, coordinator
- Toyohashi University of Technology (TUT), Toyohashi, Japan
- University Jean Monnet (UJM), Saint Etienne, France
- KU Leuven, Ghent, Belgium

Academic degree(s) awarded:
- UEF: Master of Science, Computer Science
- UJM: Master Optics, Image, Vision and Multimedia
- KU Leuven: Erasmus Mundus Master of Science in Imaging and Light in Extended Reality
- TUT: Master of Engineering, Major in Computer Science and Engineering

Starting in 2025, there will be two awarded degrees:
- Master of Science Joint degree from UEF-UJM-KU Leuven
- National degree from TUT: Master of Engineering

Number of ECTS: 120 ECTS

Number of students per cohort: 15 – 25

Tuition fees per year:
- For students with citizenship of EU/EEA-countries or Switzerland: N/A
- For students with citizenship of other non-EU/EEA countries: 9 000 EUR/academic year
- EMJM scholarship holders regardless of citizenship: N/A
- Graduates of IMLEX full partner and associate partner universities: N/A

Component, faculty or department involved:
- UEF: Faculty of Science, Forestry and Technology
- UJM: Télécom Saint-Etienne
- KU Leuven: Faculty of Engineering Technology
- TUT: Department of Computer Science and Engineering

METHODS AND RESULTS OF THE PREVIOUS ACCREDITATION(S)

Not applicable: according to applicable laws in the consortium partner countries, Erasmus Mundus programmes are exempted from the governmental recognition procedures and are by law recognized as new higher education programmes during the first years of the programme".

HUMAN AND MATERIAL RESOURCES DEDICATED TO THE PROGRAMME

Human resources

Administrative staff	1 project coordinator 3 local administrative coordinators 1 quality assurance board chair Involvement from local administrative staff members and experts employed by the partners for matters related to internationalisation, marketing, financial and legal topics, …
Academic coordinators	1 programme leader 4 local academic coordinators 1 learning outcomes coordinator
Teaching staff	>25 teaching staff members with heterogeneous profiles in academia and/or industry + additional local supervisors and assistants

MATERIAL RESOURCES:

o General material resources at all four full partner universities:
– Classrooms, study spaces, general facilities, free Wi-Fi;
– University library, with access to physical and digital collections regarding among others imaging, optics, computer science, extended reality;
– Digital resources, e.g. learning management system; – Student housing and healthcare services on campus or in the vicinity;

o Specialized equipment, depending on the course units offered on campus:
– Specialised laboratory setups;
– Computing facilities: workstations and servers for real-time rendering, image processing, and machine learning;
– Extended reality equipment: e.g. VR and MR headsets, AR tablets, VR-glasses, motion tracking systems;
– Imaging and optical measurement devices: e.g. displays and projectors, hyperspectral and multispectral cameras, 3D scanner, 3D printer, colour sensors, 360° camera, spectroradiometer, colorimeter, goniophotometer.

STUDENT POPULATION: EVOLUTION AND TYPOLOGY OVER THE LAST 2/3 YEARS (including number of graduates)

		Student cohort (academic year first enrolled)					
		2020	**2021**	**2022**	**2023**	**2024**	**2025**
Applicants		122	110	232	247	115	706
Available scholarships		8+8	8+8	8+8	8+8	N/A	15
Enrolled	**Total**	**17**	**16**	**20**	**13**	**8**	***TBD***
	Male	15	12	14	10	7	
	Female	2	4	6	3	1	
Graduates	**Total**	**15**	**15**	**18**			
	Male	14	12	14			
	Female	1	3	4			

II- VISIT DESCRIPTION

COMPOSITION OF THE EXPERTS PANEL

- David Fofi, Chair of the panel and academic expert, Professor in Computer Vision and Robotics, Université Bourgogne, France
- Shinnosuke Obi, Academic expert, Professor of mechanical engineering, Keio University, Japan
- Jeremy Picot-Clemente, Socio-professional expert, Photonics Technology Manager, European Photonics Industry Consortium (EPIC), Lyon, France
- Mia Brzakovic, Student expert, Quality assurance expert for the European Students' Union (ESU), Investment analyst, Atlantic Bridge VC, Dublin, Ireland

Hcéres was represented by Amélie BENSIMON, Project manager for international cooperation, European and International Department.

VISIT DESCRIPTION

The online visit, which took place between October 1rst-October 2nd 2025, was a comprehensive two half day-review that included a series of meetings with various stakeholders involved in the Erasmus Mundus Master of Science in Imaging and Light in Extended Reality (IMLEX).

Throughout the visit, the experts engaged with representatives and coordinators from each university, including administrative staff, quality assurance staff, lecturers, students and socio-economic partners. Further details of the visit and the outcomes of these meetings are set out in the following section.

VISIT AGENDA

DATE: 01/10/2025

Time	Session		Interviewees
8:45 – 10:00	**1**	**Opening session with top management from the four institutions & governing bodies of the joint programme** ▪ Opening by Hcéres representative ▪ Introduction of the chair and of the expert panel ▪ Summary of the online evaluation visit ▪ Roundtable from the IMLEX representatives ▪ Presentation of the IMLEX programme (15 minutes maximum) by programme leader followed by discussions with the expert panel	1. Programme leader, Academic Management Board (AMB)chair 2. UEF – Administrative coordinator 3. UJM - Academic local coordinator 4. KU Leuven – Academic local coordinator 5. TUT – Academic local coordinator 6. TUT – Academic local coordinator 7. UJM – Administrative local coordinator 8. KU Leuven – Administrative local coordinator 9. TUT – Administrative local coordinator 10. KU Leuven – Quality Assurance Board (QAB) chair 11. UEF – Dean of the Faculty of Science, Forestry and Technology 12. UEF - Vice Rector for Academic Affairs 13. UJM – Dean of Télécom Saint-Etienne 14. KU Leuven – Vice dean of education at KU Leuven Faculty of Engineering Technology 15. KU Leuven – Campus chair KU Leuven campuses Ghent & Bruges 16. TUT – President 17. TUT – Administrative local coordinator
10:00 – 11:00	**2**	**Meeting with the academic staff**	1. UEF - Lecturer of Robotics and XR course 2. UEF - Professor, lecturing Photonics and Optics Fundamentals 3. UJM - Professor of Computer Vision 4. UJM - Associate Professor 5. KU Leuven - Associate Professor 6. TUT - Assistant professor

11:00 – 11:15	Break		
11:15 – 12:00	**3**	**Meeting with the administrative staff**	1. TUT – Administrative local coordinator 2. TUT– Administrative local coordinator 3. UJM – Administrative local coordinator 4. KU Leuven – Administrative local coordinator 5. KU Leuven – Mobility coordinator 6. UEF – Administrative coordinator
12:00 – 13:00	**4**	**Meeting with the socio-economic partners and the alumni**	1. Sony CSL 2. Dispelix 3. SeeTrue Technologies; newly selected Chair for the IMLEX Industrial Board 4. Volvo Group 5. Alumnus, conducting PhD studies in Tokyo
13:00 – 13:30	**Experts debriefing session**		

DATE : 02/10/2025

Time	**Session**		**Interviewees**
9:00 – 10:00	**5**	**Meeting with students**	1. Newly enrolled student from cohort 2025 2. Newly enrolled student from cohort 2025 3. Student from cohort 2024 4. Graduating student, programme representative in the global Erasmus Mundus Students and Alumni Association (EMA)
10:00 – 11:00	**6**	**Meeting with the quality assurance staff**	1. KU Leuven – QAB chair 2. UEF – Full partner representative in QAB 3. UJM – Full partner representative in QAB, learning outcomes coordinator 4. TUT – Full partner representative in QAB 5. TUT – Full partner representative in QAB 6. Chiba University – Associate partner representative in QAB 7. Alumnus and former student representative, member in QAB
11:00 – 11:15	Break		
11:15 – 11:30	Experts debriefing session and preparation for session 7		
11:30 - 12:30	**7**	**Closing dialogue**	1. UEF – Programme leader, AMB chair 2. UEF – Administrative coordinator 3. UJM – Academic local coordinator 4. KU Leuven – Academic local coordinator 5. TUT – Academic local coordinator 6. TUT – Academic local coordinator 7. UJM – Administrative local coordinator 8. TUT – Administrative local coordinator 9. TUT – Administrative local coordinator 10. KU Leuven – QAB chair
12 : 30-13 :00	Expert debriefing session		

III- EVALUATION REPORT

1. ELIGIBILITY

Level of compliance		
Compliant	Compliant with conditions	Non-compliant

1.1 STATUS

The institutions that offer a joint programme should be recognised as higher education institutions by the relevant authorities of their countries. Their respective national legal frameworks should enable them to participate in the joint programme and, if applicable, to award a joint degree. The institutions awarding the degree(s) should ensure that the degree(s) belong to the higher education degree systems of the countries in which they are based.

The IMLEX consortium fulfils the formal eligibility requirements of the European Approach for Quality Assurance of Joint Programmes. All four full partner universities — University of Eastern Finland (UEF), Université Jean Monnet Saint-Étienne (UJM), KU Leuven, and Toyohashi University of Technology (TUT) — are legally recognised higher education institutions entitled to deliver Master's degrees within their respective national systems. Each operates under national accreditation frameworks aligned with the European Standards and Guidelines (ESG) or, in Japan, under the authority of the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The accreditation documents provided confirm the institutional rights to award second-cycle degrees in the relevant scientific fields.

Within Europe, UEF acts as the coordinating and awarding institution of the joint degree, officially registered in the Finnish national higher education database (EQF level 7). UJM and KU Leuven are formally integrated in the degree award process through the joint diploma mechanism validated for the 2025 intake. In parallel, TUT awards a Japanese Master of Engineering degree. As full joint degree arrangements between the EU and Japan remain legally complex due to differing national regulatory frameworks, the current dual-degree configuration constitutes an appropriate and functional arrangement for IMLEX, ensuring both legal robustness and high international visibility.

Beyond formal compliance, the IMLEX partnership relies on complementary research strengths and on previous Erasmus Mundus collaboration. UEF's expertise in photonics, UJM's in computational imaging, KU Leuven's in lighting and human-centred design, and TUT's in XR and robotics together form a coherent scientific foundation for the programme.

This scientific complementarity supports a coherent curriculum spanning the entire imaging chain.However, some differences in institutional cultures, calendars, and assessment frameworks still generate operational complexity, particularly for grade harmonisation and course validation.

The consortium's legal and administrative framework, notably the 2024 Partnership Agreement, clearly defines the partners' responsibilities and governance arrangements. The document aligns with the European Approach, though interviews indicated that practical awareness of the governance mechanisms and institutional responsibilities remains limited among local academic and administrative staff outside the boards. Strengthening internal dissemination of these procedures would help reinforce jointness at operational level and foster a stronger sense of belonging to the joint degree.

Overall, the consortium meets the eligibility and status standard. Its legitimacy is fully established, and strengthening the programme's institutional embedding would further support its long-term consolidation as an integrated international degree.

1.2 JOINT DESIGN AND DELIVERY

The joint programme should be offered jointly, involving all cooperating institutions in the design and delivery of the programme.

IMLEX was jointly designed through iterative consultation among the four partner universities. Preparatory meetings and continuous exchanges have led to a shared pedagogical vision, structured around mobility, interdisciplinarity, and cultural immersion. The learning outcomes, teaching methods, and assessment procedures were validated jointly through the Academic and Management Board (AMB), supported by the Quality Assurance Board (QAB).

Each partner contributes to distinct yet complementary components according to its specialties:

- UEF (Finland) – Photonics, optics, data analysis, robotics and XR fundamentals (semester 1);
- UJM (France) – Computational imaging, deep learning, 3D visualization (semester 2);
- KU Leuven (Belgium) – Lighting metrology, human-technology interaction, ethics (summer school);
- TUT (Japan) – XR, robotics, and innovation, plus jointly supervised master's thesis (year 2).

The curriculum reflects a high degree of coordination, though interviews suggest that the pedagogical integration between semesters could be strengthened – for example through shared cross-semester projects or clearer sequencing of prerequisites. Some course units remain locally managed, limiting flexibility in updating content or aligning workloads. The introduction of a Learning Outcomes Coordinator within the QAB is a positive step toward better alignment, provided that monitoring tools are effectively used.

The governance structure is robust, with the AMB ensuring strategic coordination and the QAB guaranteeing internal quality assurance. The forthcoming Industrial Board (2025) is expected to enhance relevance and feedback from industry, though its operationalisation remains at an early stage. The existence of joint quality procedures and a detailed Quality Assurance System and Procedures Handbook (QASPH) is a significant asset, reflecting compliance with ESG 1.1–1.9. Nonetheless, the implementation of these procedures across partners still depends heavily on a few key individuals, which represents a risk for long-term continuity.

In summary, IMLEX exhibits a genuine joint design and delivery, supported by formal mechanisms and active collaboration. The next challenge lies in deepening the culture of shared ownership, ensuring that all teaching and administrative staff fully internalise the joint dimension beyond formal structures.

1.3 COOPERATION AGREEMENT

The terms and conditions of the joint programme should be laid down in a cooperation agreement. The agreement should in particular cover the following issues:
- Denomination of the degree(s) awarded in the programme;
- Coordination and responsibilities of the partners involved regarding management and financial organisation (including funding, sharing of costs and income etc.);
- Admission and selection procedures for students;
- Mobility of students and teachers;
- Examination regulations, student assessment methods, recognition of credits and degree awarding procedures in the consortium.

The IMLEX Partnership and Cooperation Agreement (2024–2030) provides a comprehensive legal and operational framework governing academic, financial, and administrative cooperation. It clearly defines the partners' obligations, decision-making bodies, voting rules, financial distribution, and procedures for student selection, mobility, and degree awarding. While UEF acts as the coordinating and financial manager, responsibilities are shared across partners: KU Leuven leads quality assurance processes, UJM coordinates the development of the Industrial Board, and TUT oversees the master's thesis organisation and graduation procedures. This distribution ensures balanced involvement and demonstrates that operational tasks are allocated fairly within the consortium.

The agreement includes detailed annexes on governance, quality assurance, and data protection (GDPR). It ensures compliance with Erasmus+ and national regulations, and it explicitly recognises the European Approach principles. The recent renewal of the consortium after the end of the first Erasmus Mundus funding demonstrates institutional commitment and long-term sustainability.

However, some operational aspects remain dependent on annual negotiation or informal consensus. Moreover, communication between boards and local services could be more systematic, especially regarding student support and visa procedures. The establishment of the Industrial Board and the consolidation of alumni tracking are timely measures to improve strategic follow-up and external feedback loops.

In conclusion, the Cooperation Agreement provides a solid and compliant legal foundation for the joint programme. Its scope and structure meet European expectations, but a more systematic internal dissemination and simplification of procedures would further enhance efficiency and institutional anchoring.

2. LEARNING OUTCOMES

Level of compliance		
Compliant	Compliant with conditions	Non-compliant

2.1 LEVEL [ESG 1.2]

The intended learning outcomes should align with the corresponding level in the Framework for Qualifications in the European Higher Education Area (FQ-EHEA), as well as the applicable national qualifications framework(s).

The IMLEX intended learning outcomes (ILOs) are explicitly mapped to Level 7 of the European Qualifications Framework (EQF) and the Framework for Qualifications in the European Higher Education Area (FQ-EHEA). The alignment matrix (Appendix 4) confirms correspondence between IMLEX outcomes and the expected second-cycle descriptors: advanced knowledge, critical awareness of issues at the frontier of the field, and professional and research autonomy.

Each national framework formally recognises the qualification at the equivalent level:

- Finland – NQF 7, officially registered and audited by FINEEC;
- France – Master on an accredited domain (Optics, imagery, vision, multimedia) by the Ministry of Higher Education and Research
- Belgium (KU Leuven) – Flemish QF level 7;
- Japan (TUT) – Master of Engineering, equivalent to the second cycle of higher education.

The ILOs clearly refer to advanced theoretical, methodological, and practical competences, combining scientific depth and application-driven synthesis. They articulate the graduates' capacity to operate independently in research and industrial contexts and to integrate knowledge from photonics, imaging, and XR.

Nevertheless, the formulation of ILOs remains relatively generic. While they ensure compliance with framework descriptors, their articulation could more clearly distinguish between knowledge, skills, and attitudes, and specify how soft skills (communication, intercultural teamwork, ethics) are evidenced. Given the rapidly evolving nature of the XR and imaging sector, and the growing input from the Industrial Board, sharper and more operational ILOs would support continuous curriculum adaptation. Although the presence of a Learning Outcomes Coordinator within the Quality Assurance Board is an asset, systematic mapping between course-level outcomes and programme ILOs is not consistently visible across syllabi. Strengthening this constructive alignment would enhance transparency and facilitate quality monitoring.

Overall, the level and scope of the ILOs are fully consistent with EQF and FQ-EHEA expectations, but further refinement of formulation and operationalisation would consolidate the programme's learning-outcome-based approach.

2.2 DISCIPLINARY FIELD

The intended learning outcomes should comprise knowledge, skills, and competencies in the respective disciplinary field(s).

The IMLEX ILOs reflect a coherent and ambitious integration of the interdisciplinary domains of photonics, imaging, and extended reality (XR). The programme successfully combines the traditions of optical physics and computational vision with human–technology interaction, resulting in a holistic profile spanning from light–matter theory to immersive system design.

The curricular structure (Appendix 6) ensures progressive learning:

- Semester 1 (UEF) – fundamentals of optics, photonics, and applied robotics;
- Semester 2 (UJM) – computational imaging, deep learning, and 3D visualisation;
- Summer School (KU Leuven) – lighting metrology, perception, and ethics;
- Semester 3 (TUT) – XR applications, robotics, and industrial case studies;
- Semester 4 – joint master's thesis.

This progression demonstrates clear disciplinary depth and interconnection. Students acquire scientific reasoning and experimental skills, algorithmic and computational competences, and applied design capacities for XR and vision systems.

However, interviews with students and teachers indicate that bridging between the physical and computational components could be further reinforced, particularly through integrated project work or explicit thematic links across semesters. Some courses remain locally defined, with variable emphasis on research methodologies and system-level integration. While this diversity enriches exposure, it can at times limit the perception of a single, unified disciplinary trajectory. Industrial partners similarly highlighted the need for stronger articulation between physical modelling, data-driven approaches and application-oriented XR workflows, suggesting that enhanced cross-disciplinary integration would better reflect current industry practices.

In essence, the disciplinary design is well balanced and forward-looking, grounded in strong expertise across institutions, yet it would benefit from more visible curricular coherence and stronger articulation of the scientific continuum between optics and XR engineering.

2.3 ACHIEVEMENT [ESG 1.2]

The programme should be able to demonstrate that the intended learning outcomes are achieved.

Achievement of the learning outcomes is assessed through diverse and complementary evaluation methods embedded across all semesters. The Assessment Regulations ensure a harmonised framework, setting principles for transparency, feedback, and grade conversion. Each course specifies evaluation criteria aligned with the learning objectives, typically via written examinations, project reports, laboratory assignments, or oral presentations. These modalities address key intended learning outcomes of the programme, such as mastering the physical and computational principles underpinning imaging and XR technologies, applying analytical and programming skills to solve complex problems, and demonstrating transversal competences including communication, intercultural teamwork, and ethical reasoning.
`

The progressive learning path ensures cumulative acquisition: conceptual and analytical mastery in year 1, integration and autonomy in year 2. The master's thesis serves as the capstone assessment, jointly supervised and examined by at least two partner institutions, often in collaboration with industry. Defence sessions are collective, fostering inter-institutional calibration of expectations.

Evidence of achievement is further supported by employer feedback and alumni destinations, which confirm graduates' employability in R&D, XR, and imaging sectors. Students interviewed expressed satisfaction with the variety of assessment methods and the professionalism of supervision, though some mentioned uneven feedback practices and differences in grading culture among institutions – an area the consortium has begun to address through common rubrics and moderation procedures.

While IMLEX demonstrates strong assurance of learning, the consortium could usefully formalise its assessment mapping (ILO–course–assessment) and systematise data collection on graduate competences to better evidence outcomes attainment over time.

2.4 REGULATED PROFESSIONS

If relevant for the specific joint programme, the minimum agreed training conditions specified in the European Union Directive 2005/36/EC, or relevant common trainings frameworks established under the Directive, should be taken into account.

Not applicable.

3. STUDY PROGRAMME [ESG 1.2]

Level of compliance		
Compliant	Compliant with conditions	Non-compliant

3.1 CURRICULUM

The structure and content of the curriculum should be fit to enable the students to achieve the intended learning outcomes.

The programme extends over four semesters, following the new mobility structure introduced for the 2025 intake. All students begin the first semester in Finland, continue with a common second semester in France, and then attend the Summer School in Belgium before progressing to the third semester in Japan. The fourth semester is dedicated to the Master's thesis, which may be carried out at any consortium institution or with an approved external partner. The final examination of the Master's thesis is organised jointly, with all partners participating simultaneously.

The curriculum is designed in a form of gradual build-up of the level of specialisation and expertise in the field of imaging and XR, where the connection between lectures given at different semesters are provided for each category of the learning outcome. During the studies, students experience the life in three different European countries and in Japan and learn local languages so that they are immersed in local society as much as possible and learn the cultural context behind the technology.

The first semester covering Fundamentals is offered by UEF in Finland. All core courses – including Photonics and Optics Fundamentals, Introduction to Algorithmic Data Analysis, Robotics and XR, Eye Tracking, Lighting Science, and Colour Science – are mandatory, as defined in the programme's curriculum. In addition, students select one optional course from a set of four advanced modules in photonics and spectral imaging. Cultural and language learning is supported through compulsory English, Japanese or national language courses. Students are expected to complete a total of 30 ECTS.

The second semester covering the field of Computational Imaging and Vision is offered by UJM, France, where four compulsory lectures, Real-time 3D Visualisation, Deep Learning for XR and Computer Vision, Human Vision, and Lightning Science 2 are provided, besides the Project and language from the choice of English, Japanese or national language. Students are expected to earn totally 23 ECTS in this semester.

During the transition from France to Japan, the Summer School on Lighting is provided by KU Leuven in Belgium. During the two-week programme in September, students take two courses, Lighting Technology and Lighting Methodology, and earn totally 7 ECTS.

The third semester is designed to offer the field of Imaging, Lighting and XR by TUT in Japan. Four compulsory lectures of 4 ECTS each, such as Data Science and Analysis, Advanced Research Methods, Ethics for Researchers, and 3D Vision Computation, are offered, besides an 8 ECTS course titled Case Study in Imaging and Light and XR and a Japanese language course. Students can choose one optional course among four choices. Totally 30 ECTS are provided for this semester.

The final semester is fully devoted to the Master's thesis (30 ECTS), which may be conducted at any full partner university, associated academic institution, or approved industrial partner. According to the Partnership Agreement and the thesis guidelines, IMLEX theses are undertaken in a variety of settings, ranging from research laboratories in Finland, France, Belgium and Japan to industrial environments proposed through the consortium's network of associated companies. This diversity reflects the programme's dual academic and applied orientation. All theses are jointly supervised and examined by an international committee including TUT representatives, in compliance with Japanese national regulations. The final defence is organised at TUT, either on-site or online, ensuring a consistent and comparable evaluation process across all students. Upon successful completion of the 120 ECTS, graduates receive a joint Master of Science degree from the European partners and a Japanese Master of Engineering degree from TUT.

The strength of the programme lies in the well-designed, streamlined curriculum offered in collaboration with the member universities. While in the preceding programme, the mobility path was separated according to the choice of the students, the present curriculum offers a unified, common contents up to the third semester. This change has facilitated the simplification of the coordination as well as the quality assurance of each student. KU Leuven contributes to the curriculum by offering a summer school but also by sending faculty members to deliver regular courses in person at both UEF and UJM. This strengthens the joint nature of the curriculum and assures each full partner's engagement and visibility to the students.

Another notable strength of the programme is the fact that the two different cultures, European and Japanese, are smoothly connected to each other, both in terms of the course contents and the transition to the research activity. The common final examination of Master's Thesis contributes not only to the fair quality assurance of the study outcome, but also to understanding the research activity of partner institutions. This point has been also emphasised during the site visit in various ways by the participating researchers.

The participating students are provided with various opportunities of study and cultural context as well. Some students noticed that they need to process multiple tasks in parallel, such as the registration in French university and the registration of Master's thesis project almost at the same time. This kind of overlap in programme arrangement is probably inevitable, and there seems to be no serious issues found in this context.

Overall, the curriculum design adequately supports the targeted academic area in an intercultural setting. While credited internships are not permitted under Japanese regulations, the programme compensates through structured industry exposure, including Industrial Days and regular contributions from industrial partners. These activities maintain a strong connection to professional contexts.

3.2 CREDITS

The European Credit Transfer System (ECTS) should be applied properly and the distribution of credits should be clear.

The total credits to be earned by the students are 120 ECTS, and they are distributed among four semesters and one summer school. This apparently irregular arrangement is necessary for the participating students to follow a single mobility path and visit every member university in four countries.

Semester	Institution	ECTS Structure	Total
S1 – Fundamentals	UEF	5 compulsory courses (4 or 5 ECTS), 1 compulsory course (5 ECTS), 1 KU Leuven course (3 ECTS), 1 optional course (4 ECTS), 1 language course (2 ECTS)	**30**
S2 – Imaging & Vision	UJM	3 courses (4 ECTS), 1 KU Leuven course (3 ECTS), project (5 ECTS), language course (3 ECTS)	**23**
Summer School	KU Leuven	2 courses (4 ECTS + 3 ECTS)	**7**
S3 – XR & Multimodal Systems	TUT	3 compulsory courses (4 ECTS), 2 optional courses (4 ECTS), ethics course (2 ECTS), case study (8 ECTS)	**30**
S4 – Master's Thesis	Any consortium partner	Master's thesis (30 ECTS)	**30**

The distribution of the credits in four semesters and one summer school is reasonably arranged. The way how the research activity towards Master's Thesis is conducted is totally up to the hosting university, though the final examination in collaboration would assure the equivalence in study outcomes.

3.3 WORKLOAD

A joint bachelor programme will typically amount to a total student workload of 180-240 ECTS-credits; a joint master programme will typically amount to 90-120 ECTS-credits and should not be less than 60 ECTS-credits at second cycle level (credit ranges according to the FQ-EHEA); for joint doctorates there is no credit range specified. The workload and the average time to complete the programme should be monitored.

The workload for 120 ECTS is distributed in four semesters and one summer school. As explained in the preceding section, the workload is more or less evenly distributed accordingly, except for the second semester where students earn only 23 ECTS. It is not quite clear how the students would spend the time corresponding to the missing 7 ECTS, though.

The students are expected to go through additional "workload" caused by administrative challenges, particularly in the early stage of the life in France, according to the students. Compared to the very smooth start of the first semester in Finland, the students have experienced some challenges when they started the life in France. There is no notable unevenness in academic workload.

The workload during the fourth semester for the Master's Thesis may strongly depend on the style and topic of the research project. There is apparently no such unified rule of measuring the workload of each student during this semester, although the outcome is equally evaluated at the end of the semester by the collaborative examination.

4. ADMISSION AND RECOGNITION [ESG 1.4]

Level of compliance		
Compliant	Compliant with conditions	Non-compliant

4.1. ADMISSION

The admission requirements and selection procedures should be appropriate in light of the programme's level and discipline.

The IMLEX admission process is well-structured, centralised, and transparent. It is managed by the University of Eastern Finland (UEF) on behalf of all partners, in accordance with common criteria formally approved by the Academic and Management Board (AMB). This central coordination guarantees procedural uniformity and fairness between applicants from diverse academic backgrounds and regions.

Applicants must hold a Bachelor's degree corresponding to 180 ECTS in a relevant field (physics, optics, photonics, computer science, electrical or optical engineering), and demonstrate English proficiency at CEFR level C1 (IELTS ≥ 6.5 or equivalent). The three-stage process – eligibility verification, academic evaluation, and final ranking – is clearly defined and documented on the consortium's website and in the Admission Regulations 2025 annex.

Selection is highly competitive, with over 700 applications for approximately 25 places in recent intakes, resulting in a diverse and academically strong student body. Evaluation is conducted by a consortium committee including academic representatives from all partner universities, ensuring that disciplinary expertise informs admission decisions. Interviews with staff nevertheless indicate uneven participation in the process: while the central committee operates effectively, some teachers and local administrative teams remain only partially informed about selection criteria and outcomes, limiting collective ownership.

As noted during the site visit, relatively few selected students originate from the consortium's own universities, a consequence of the open, global competition and the structural design of Erasmus Mundus programmes. Representation from Latin America also remains limited. Although gender balance is not used as a selection criterion, the proportion of women in the cohorts has improved over time, reflecting broader diversification trends rather than targeted policy measures.

The AMB reviews the criteria annually to ensure alignment with the evolving scientific scope of the programme. Nonetheless, few formal metrics are used to assess the predictive validity of admission criteria (e.g. correlation between entry profile and academic success). Such data-driven monitoring could strengthen the transparency and fairness of the system.

Finally, the communication and onboarding of admitted students – notably concerning visa support, housing, and mobility sequencing – rely heavily on the local administrative coordinators, whose workload varies significantly among partners. While overall student satisfaction is high, differences in information flow and timing persist between institutions, suggesting the need for a more harmonised pre-arrival protocol.

In summary, the admission process is academically sound, selective, and transparent, but it would benefit from broader staff involvement, systematic impact analysis, and better harmonisation of student guidance prior to mobility.

4.2. RECOGNITION

Recognition of qualifications and of periods of studies (including recognition of prior learning) should be applied in line with the Lisbon Recognition Convention and subsidiary documents.

Recognition procedures within IMLEX are formally compliant with the Lisbon Recognition Convention and implemented consistently across all partners through shared tools and a consolidated grading table. The UEF, as coordinating institution, performs the initial verification of foreign qualifications in line with ENIC-NARIC

principles. Each candidate's academic background is assessed for alignment with EQF Level 6 and relevance to the programme's disciplines.

Once enrolled, the mutual recognition of study periods and credits functions smoothly. All courses are expressed in ECTS, and partner institutions apply a common grade-conversion scale detailed in the student agreement. Credits earned at any partner are automatically validated in the others' registries, and a unified transcript of records is issued by UEF at graduation. This academic coherence ensures transparency and portability of learning outcomes.

From the 2025 cohort onward, students will receive a joint European Master of Science degree (UEF, UJM, KU Leuven) and a parallel Japanese Master of Engineering degree (TUT). This evolution marks a significant step towards deeper integration, though the practical implementation of the joint diploma and the alignment of national databases are still in progress. Ensuring that institutional administrative systems fully support this joint certification will be a key challenge for the coming cycle.

Recognition of prior learning (RPL) is possible in exceptional cases and decided collectively by the AMB, based on correspondence between prior competences and course learning outcomes. While this flexibility is positive, its procedures remain little known among students and teaching staff, and RPL applications are rare. More proactive communication on this possibility would enhance inclusiveness.

Overall, IMLEX demonstrates solid and consistent recognition mechanisms, underpinned by clear documentation and legal alignment. Nevertheless, the consortium should now consolidate the operational aspects of the forthcoming joint diploma and strengthen staff awareness of RPL provisions, to ensure both academic and administrative robustness of recognition across the programme.

5. LEARNING, TEACHING AND ASSESSMENT [ESG 1.3]

Level of compliance		
Compliant	Compliant with conditions	Non-compliant

5.1 LEARNING AND TEACHING

The programme should be designed to correspond with the intended learning outcomes, and the learning and teaching approaches applied should be adequate to achieve those. The diversity of students and their needs should be respected and attended to, especially in view of potential different cultural backgrounds of the students.

The IMLEX programme offers a broad and interdisciplinary curriculum combining Photonics, Colour Science, Artificial Intelligence, Graphics Programming, and Psychology. Because of the wide range of disciplines, the well-structured interrelationship between courses across multiple universities is considered particularly, allowing students to grasp individual topics and understand their integration.

Interviews highlighted noticeable differences in teaching methods across institutions, particularly between the lecture-oriented approach predominant in some semesters and the more project-based learning environment encountered in France. While this diversity reflects the pedagogical traditions of each partner and exposes students to varied learning modalities, some felt that transitions between styles could be better articulated to support continuity and skill development.

The programme adopts an application-oriented pedagogy, combining lectures, labs, and project work with company visits and remote lab tools developed by students. Supplementary online courses in innovation, entrepreneurship, research methodology, and project management support students in enhancing both technical and soft skills, fostering deeper integration of theoretical knowledge with real-world application.

In addition to the integration of mobility and joint programme units, the curriculum emphasizes innovative teaching approaches such as flipped classrooms, challenge-based learning, and alumni-involved assessments. It aims to bridge theoretical and experimental science through the use of AR environments.

The programme also benefits from contributions by scholars and guest lecturers, who bring unique and complementary expertise. These lecturers are often drawn from associated partners or the wider professional and academic network, including industry professionals, professional bodies, and other universities, thereby enriching the learning experience and expanding students' exposure to real-world contexts.

During their Master's thesis, students are supervised by academic representatives from partner institutions, ensuring both scientific rigour and personal support. To guide their progress, a monthly "Thesis Webinar" is held in the fourth semester, allowing students to share updates, receive feedback, and learn from peers. This regular reflection process helps them cultivate essential project management and self-evaluation skills.

Each partner university upholds strong diversity policies and concrete measures to foster an inclusive academic environment for students and staff of varied nationalities. At KU Leuven, for example, diversity is embedded across education and research through dedicated diversity teams in each faculty. For IMLEX, initiatives such as UEF Welcome Days support intercultural communication, and the student agreement promotes ethical conduct regarding gender, culture, and religion. In addition, the consortium's pre-arrival e-learning platform helps accommodate the diversity of students' scientific backgrounds by providing self-study resources before the start of the programme. All partners have HR contacts to address non-academic concerns. Diversity is considered a natural strength of EMJM programmes and is consistently valued by IMLEX students.

As for the cultural elements, the instruction language is English, but students can also study French, Finnish, and Japanese (A1–B2 levels) during their mobility periods. In semesters 1 to 3, language studies are compulsory—either Japanese, Academic English, or the national language. Japanese courses help prepare students for their semester in Japan, while English supports non-native speakers in academic settings. Local language learning also promotes cultural and social integration. Beyond formal classes, students enhance their language skills through daily life interactions.

5.2 ASSESSMENT OF STUDENTS

The examination regulations and the assessment of the achieved learning outcomes should correspond with the intended learning outcomes. They should be applied consistently among partner institutions.

To meet degree requirements, students must attend classes, complete assignments, and participate in exams and seminars. A range of assessment methods (case studies, essays, presentations, lab work, and oral exams) is used to ensure alignment with each module's learning objectives. Interviews also highlighted that assessment practices differ significantly across partner institutions, reflecting diverse academic cultures. Rather than a weakness, this exposes students to a broad spectrum of evaluative approaches, strengthening their adaptability and academic maturity.

At the start of each module, students receive details of the assessment schedule and grade distribution. Evaluation follows the ECTS grading scale (A–F, 5–0), and a shared framework ensures full credit recognition across partner institutions. Grades and credits awarded by any full partner are recognised by all, with conversion rules detailed in the student agreement. A concrete example of the functioning QA process is the harmonisation of grading practices across the consortium, particularly to account for the traditionally lower grading range used in France, ensuring fairness and comparability for all students.

The style of the Master's thesis differs between Europe and Japan, and the strict Japanese format has therefore been adopted across all partner universities to comply with TUT's national requirements. TUT appoints a supervisor for each student and oversees topic approval and administrative procedures. Under Japanese regulations, one supervisor and one examiner are required to award the Master's degree. The IMLEX system goes beyond this minimum by implementing joint evaluation with at least three examiners: two from TUT and one or two from UEF, UJM or KU Leuven.

Chiba University and Utsunomiya University, both academic associate partners, play a specific role at the thesis stage. Although they are not full degree-awarding partners, they host some thesis projects and, when they do so, provide an additional examiner to the evaluation committee. This reinforces the scientific alignment of thesis work conducted in Japan outside TUT.

For company-based theses, supervision may involve an industrial expert alongside an academic co-supervisor from a full partner. All students defend their thesis at TUT in August, either physically or online. Evaluation follows the IMLEX assessment form, resulting in a single grade (1–5) and a TUT pass/fail decision. Planned improvements will further refine feedback and process monitoring.

At the end of the programme, students have their credits recognised across all partner institutions and can obtain transcripts from each. UEF, as the coordinating institution, issues the official transcript using the ECTS scale. Student success rates have been relatively high across the past three cohorts. Appeal procedures are clearly communicated via the programme website and student agreement. Depending on the case, appeals may be addressed locally or by the Academic Management Board (AMB). Actual appeals are rare, which the Quality Assurance Board (QAB) sees as evidence of the programme's effectiveness, especially given the high standards and complexities of international coordination.

6. STUDENT SUPPORT [ESG 1.6]

Level of compliance		
Compliant	Compliant with conditions	Non-compliant

The student support services should contribute to the achievement of the intended learning outcomes. They should take into account specific challenges of mobile students.

The consortium demonstrates a clear commitment to providing comprehensive support to its students, with particular attention to the complexities of international mobility. Before arrival, students receive precise and timely information on academic, administrative, and practical matters. Communication between the International Offices and incoming students is well organised, and guidance on visas, registration, and insurance is effectively coordinated. The University of Eastern Finland (UEF) sets an excellent example through its proactive pre-arrival communication and thorough logistical preparation, ensuring that students are fully informed before travelling. It is recommended that the consortium establish a shared pre-arrival protocol, including standardised written information and a consistent timeline for distribution across partnering institutions.

Upon arrival, the majority of institutions ensure that students are welcomed through structured activities, administrative briefings, and introductions to academic and laboratory facilities. UEF and TUT offer well-organised induction programmes featuring tutor appointments, welcome packages, and social and cultural activities that encourage integration. Students praised the proactive involvement of coordinators and tutors in these institutions. By contrast, UJM's onboarding experience received mixed feedback, pointing to slightly less coordinated administrative processes and limited use of tutoring at the early stages. The consortium could benefit from harmonising arrival procedures by defining minimum standards, such as mandatory orientation sessions, institutional welcome meetings with tutors and staff, and designation of a local contact person for each student in the first month of arrival, to ensure comparable quality across all partners.

Accommodation provision varies significantly. TUT and UEF manage student housing effectively through dormitories or affordable university-managed options (200–300 euros per month), and students reported prompt and efficient support. At KU Leuven, advisory services are available but no direct allocation is offered, while UJM relies mainly on private rentals and external agencies. Although this model is common in France, the short duration of the mobility period makes the search more challenging for IMLEX students, suggesting that additional targeted support would be beneficial. A consolidated 'IMLEX Accommodation Guide' and formalised agreements with local providers could enhance reliability and reduce administrative burden across sites.

Visa and immigration assistance is generally well handled across the consortium. Students receive all required documentation from the coordinating institution promptly, and both UEF and TUT were commended for their clear step-by-step guidance and early start to visa procedures. KU Leuven and UJM provide assistance but with greater administrative complexity, particularly for France, where visa processing remains demanding. Developing a joint visa handbook with detailed national procedures, estimated processing times, and emergency contacts would ensure transparency and ease students' navigation of multi-country mobility. A shared monitoring mechanism under the Quality Assurance Board should track common challenges and propose corrective actions annually.

Academic and mentoring support constitute a solid foundation of student assistance. All students are assigned academic advisers responsible for guiding them through the study plan and recognition of prior learning. Mentoring schemes are particularly strong at UEF and TUT, which pair new students with local peers and coordinate regular follow-up meetings. UJM has recently introduced a new model involving PhD tutors to enhance personalised follow-up, a promising initiative that deserves consolidation. While academic oversight is effective overall, the level of engagement differs between institutions. The consortium could formalise tutor responsibilities and expectations, introduce a short mentoring handbook shared by all partners, and include mentor feedback in the annual quality review to secure consistency in academic support.

Cultural adaptation is naturally embedded within the IMLEX programme's structure as students move between countries and institutional contexts. The combination of academic diversity and mobility provides a valuable intercultural dimension. TUT offers compulsory Japanese language courses that encourage cultural immersion, and UEF complements this with informal social gatherings and student associations that facilitate integration. UJM and KU Leuven provide language and cultural events, such as the *Café des langues* and orientation days. The consortium could strengthen its provision by introducing a short intercultural training package before each mobility period and adjusting language classes to focus more on everyday communication rather than literary content.

Opportunities for social engagement and alumni interaction are among the programme's greatest assets. The joint mobility scheme and small cohort size create strong peer cohesion, while initiatives such as IMLEX Days and project-based activities promote collaboration between students and teaching staff. Informal alumni networks exist through social media, and the recently held online alumni meeting represents a step toward structured engagement. Despite this, contact with local students outside the consortium remains limited, and alumni interaction is not systematically organised. Establishing a formal alumni association supported by the consortium and encouraging each partner to promote cross-community events would enhance the continuity of cohort relationships and provide valuable career support for graduates.

Mental health and wellbeing support services are available at all institutions, although visibility varies. UEF and KU Leuven maintain accessible counselling structures in English, whereas information dissemination is less systematic at TUT and UJM. All partners expressed awareness of the increasing importance of mental health support for internationally mobile students, especially in times of uncertainty. To make this support more coherent, the consortium could appoint a dedicated wellbeing contact person to act as a link between academic coordinators and students, ensuring consistent communication and referral procedures across all partner universities.

Overall, the consortium provides strong, comprehensive support mechanisms that meet the expectations of an international joint programme. The professionalism of International Offices, the quality of academic mentoring, and the responsiveness of staff confirm a genuine dedication to student welfare. In addition to academic and social support, IMLEX students benefit from substantial financial assistance through Erasmus+ EMJM scholarships, which consist of a monthly allowance and a fee waiver. According to the consortium's financial framework, these EU funds also support insurance coverage, joint activities, external experts, and shared administrative costs, ensuring consistent support across mobility periods.

To further enhance consistency and predictability, the consortium could harmonise operational procedures, establish shared tools such as joint guides and minimum quality standards, and ensure systematic monitoring by the Quality Assurance Board. Such coordination would unify the student experience across UEF, UJM, KU Leuven, and TUT and sustain IMLEX's strong reputation for academic and personal support.

7. RESOURCES [ESG 1.5 & 1.6]

Level of compliance		
Compliant	Compliant with conditions	Non-compliant

7.1 STAFF

The staff should be sufficient and adequate (qualifications, professional and international experience) to implement the study programme.

The academic and administrative staff involved in IMLEX demonstrate exceptional competence, diversity, and international experience fully adequate for the implementation of this complex joint programme. The teaching body consists primarily of professors and associate professors who are internationally recognised in their respective scientific domains, photonics, computer vision, lighting engineering, and extended reality. Across the consortium, research and teaching are deeply intertwined, ensuring that students are directly exposed to cutting-edge topics.

The University of Eastern Finland joins the consortium with advanced research and teaching strength in photonics, imaging science, and computer vision, supported by world-class laboratory facilities and extensive experience in coordinating Erasmus Mundus programmes. The academic teams maintain active engagement in international projects in photonics and spectral imaging, underpinning the programme's foundational semester with cutting-edge theory and applied laboratory work.

Université Jean Monnet Saint-Étienne brings strong capabilities in computer vision, deep learning, and lighting technologies. Its expertise is particularly visible in courses concerned with visual perception and real-time 3D visualisation, supported by research infrastructure including specialised imaging platforms and multispectral instrumentation. The staff is well embedded in French and European research networks, ensuring timely curricular updates and close links to industry applications.

KU Leuven's team specialises in optical measurement technology and lighting design, operating one of the most advanced lighting research laboratories in Europe. Its involvement assures students receive high-quality training in precision measurement techniques, lighting metrology, and related software tools, including practical

instruction in a well-regarded summer school. The staff's integrated approach combines academic rigour with industrial relevance.

Toyohashi University of Technology brings expertise in human-centred technology, robotics, and virtual reality, contributing a strong Asian perspective. Its dedicated XR labs and robotics facilities support both theoretical and applied learning, embedded within Japan's leading research and innovation ecosystem. TUT's academic community is deeply engaged in interdisciplinary research, emphasising experimental project courses and cultural immersion through language and international collaboration.

Across the consortium, the academic and administrative staff demonstrate substantial international experience and professional competence, ensuring a high-quality learning experience that is both research-driven and professionally relevant. Supervisory teams include doctoral and postdoctoral researchers, who enhance the mentoring capacity and provide peer-level academic support. The engagement of associate partners and industry representatives through guest lectures and collaboration further enriches the teaching environment.

A systematic approach to coordination between institutions and quality assurance boards guarantees harmonisation of academic standards and programme coherence. While current arrangements are robust, the consortium is encouraged to formalise succession planning and roles delegation to maintain continuity amid staff mobility or turnover.

7.2 FACILITIES

The facilities provided should be sufficient and adequate in view of the intended learning outcomes.

The facilities across the consortium are modern, abundant, and well aligned with the intended learning outcomes. Students gain access to advanced laboratories, computing infrastructure, and both physical and digital resources at all partner institutions, enabling a seamless integration of theoretical instruction and applied project work.

At UEF, the School of Computing Laboratory and XR facilities are equipped with robotic systems, VR headsets, and turtle bots for project-based learning. The Centre for Photonics Sciences houses optical and spectral imaging instrumentation, providing a solid basis for experimentation in imaging, lighting, and robotics.

UJM's IXR Platform offers one of the most comprehensive XR teaching environments among European partners, including multispectral cameras, VR/MR devices, immersive projection systems, and full calibration suites.

KU Leuven's Light & Lighting Laboratory provides cutting-edge goniophotometers, hyperspectral measurement instruments, and proprietary metrological setups supporting the summer school modules and student research.

At TUT, IMLEX-dedicated laboratories feature VR headsets, photogrammetry tools, motion capture systems, and 3D printers, complemented by shared robotics and imaging rooms. Libraries, digital catalogues, and online resources further support accessible study at all sites, while the networked learning management system hosted by UEF ensures continuity in academic communication and progress tracking.

Facilities are of exemplary quality in supporting the highly technical learning outcomes of the programme. Nevertheless, periodic benchmarking and cross-validation of laboratory capabilities would help sustain equivalence of access and ensure that future technological updates are harmonised across all sites.

8. TRANSPARENCY AND DOCUMENTATION [ESG 1.8]

Level of compliance		
Compliant	**Compliant with conditions**	Non-compliant

Relevant information about the programme like admission requirements and procedures, course catalogue, examination and assessment procedures etc. should be well documented and published by taking into account specific needs of mobile students.

The IMLEX consortium provides a high-quality and reliable baseline of public information, primarily through its central website, imlex.org. This central hub successfully communicates the programme's core academic components and its interdisciplinary nature. Key information for prospective students, such as admission requirements, scholarship and fee structures, the overall curriculum map, ECTS distribution, and links to course-level learning outcomes, is publicly available and clearly explained. The programme's unique structure is well-

defined. The consortium has been successful in making complex academic rules transparent, such as the grade conversion tables, which students confirmed they "are aware about".

However, the panel finds that this central transparency becomes fragmented when moving from general programme information to the practical, operational details crucial for mobile students and socio-economic partners. The primary challenge identified is the existence of "multiple sources of truth", where critical implementation details are scattered across the local websites and internal systems of the four partner institutions.

This fragmentation appears to be a symptom of a deeper, internal communication gap. Evidence from interviews suggests that coordination is strong at the management level but less systematic among the wider teaching staff, who "meet more by opportunity" and may not be "really aware of the policy of the programme". This internal fragmentation is mirrored in the public-facing documentation. For example, the Quality Assurance staff confirmed that for student surveys, "each partner tend to use their own system" despite an "attempt to use a unique template".

This inconsistency has a direct impact on the student experience, particularly concerning mobility support. Students interviewed reported a spectrum of experiences: the pre-arrival communication and welcome process in Finland were described as "perfect" and "very clear," supported by university-managed housing. In contrast, the experience in France was perceived as the "hardest," with students facing challenges finding accommodation on the private market. Students explicitly noted there is "no real coherence between the different institutions for welcoming students (no common guidelines)". This confirms the need to consolidate essential country-specific guides for visas, housing, and administrative support into a single, unified "start-to-finish" student journey map.

From an industry and employability perspective, the current documentation represents a significant missed opportunity for a programme of this caliber. While the consortium benefits from strong industrial partners and the new Industrial Board is a positive step, this engagement is not yet leveraged effectively in public-facing documents.

First, industry visibility is lower than it could be. The role of partners, models for internships, and concrete project opportunities are not centrally showcased. As socio-economic partners confirmed during interviews, "No platform to post job offers and internship offers" exists.

Second, the programme does not publicly share key employability outcomes. This is not due to poor results; on the contrary, the administrative staff noted that "all of the students seem to find jobs easily" and the programme's public presentation lists excellent alumni positions . However, this data is not systematically tracked or published (e.g., as employment rates at 6/12 months), a weakness confirmed in the closing dialogue. Publishing this data would serve as a powerful marketing and recruitment tool, formally demonstrating the programme's value to both applicants and industry.

In conclusion, IMLEX is an excellent master's programme that meets the essential requirements for transparency. The documentation challenges identified are operational, not structural. They stem from an internal fragmentation in communication and systems, which in turn creates an inconsistent experience for students and partners. The consortium should therefore focus on developing a single, unified source of truth for all practical, procedural, and professional aspects of the programme. This would ensure the programme's public-facing documentation fully reflects the high level of academic and operational "jointness" that the consortium strives for.

9. QUALITY ASSURANCE [ESG 1.1 & PART 1]

Level of compliance		
Compliant	Compliant with conditions	Non-compliant

The cooperating institutions should apply joint internal quality assurance processes in accordance with part one of the ESG.

The programme defines the procedure of quality assurance designated to AMB and QAB and makes it transparent. The practice itself is firm and when it is proceeded, any serious issues can be addressed timely in appropriate manner.

All partner institutions have agreed on a quality policy and quality assurance mechanism and operate various committees in collaboration. A Quality Assurance System and Procedures Handbook (QASPH) has been compiled in October 2024. The contents extend totally 69 pages, covering the following:

Introduction (2 pages)
Governance and structures (10 pages)
Programme development, approval and validation (6 pages)
Student recruitment and admission (5 pages)
Mobility and student guidance (8 pages)
Teaching and learning (7 pages)
Academic results and learning outcomes evaluation (4 pages)
Social, socio-cultural and professional integration (3 pages)
Consortium collaboration, staff and staff development (9 pages)
Monitoring and review (4 pages)
Grievance (2 pages)
Crisis management (3 pages)

The QASPH has been approved by the IMLEX Quality Assurance Board, whose composition reflects the consortium's commitment to inclusive governance. The QAB brings together representatives from all full partner universities, associate academic and industrial partners, the Learning Outcomes Coordinator, an international liaison officer, alumni, and student representatives from each cohort.

The Academic and Management Boad is defined as the core structure of the consortium, and its responsibilities are defined as A. academic and B. Management & finances. Besides, the Quality Assurance Board is defined as a separate party which is responsible for good practice and quality assurance. According to the QASPH, the responsibility of the QAB is further categorised into four objectives, such as

1. To design, implement and report on the QA process,
2. To involve stakeholders in the QA process,
3. To enhance the outcomes of the IMLEX programme, and
4. To define and review procedures.

IMLEX is subject to periodic reviews following the national requirements of each partner university, and it conducted a first External Audit on a 2-year cycle. The programme is also subject to the internal Audit and EACEA evaluation. The reviews include students' participation to evaluate their satisfaction in terms of curriculum, teaching delivery, mobility procedure among others.

The Key Performance Indicators (KPI) are defined for different criteria as listed below:

- Criterion C1: A policy for quality Assurance
- Criterion C2: Processes for the design and approval of the programme
- Criterium C3: Students-centred teaching, learning and assessment
- Criterium C4: Students admission, progression, recognition, and certification
- Criterium C5: Competences and qualifications of the teaching staff
- Criterium C6: Provision of learning resources and students support
- Criterium C7: Information management for effective management
- Criterium C8: Public information: clear, accurate, objective, accessible
- Criterium C9: On-going monitoring and periodic review
- Criterium C10: Undergoing external QA

The surveys are jointly discussed and conceptually aligned across the consortium, but their practical implementation remains partly decentralised. Although a common template has been developed, partners continue to rely on their institutional tools and procedures, which limits full harmonisation. This illustrates that, while the QA framework is shared, further coordination would help improve consistency and comparability of survey data across institutions.

According to the record, the QAB meets 3-4 times a year since academic year 2020-2021, and periodically also has a joint meeting with the AMB. Apart from the meeting by the entire board, the person in charge at each partner institution communicates frequently whenever necessary. It seems that the consortium has successfully established personal networks supported by mutual trust among the partner institutions.

The students, academic staff, as well as administrative staff are involved in the analysis in order to provide necessary information to evaluation procedure. The QASPH is updated on a yearly basis to include notes by the QAB in most sections, being lessons learned and further recommendations discussed during QAB meetings.

After the first version of the IMLEX programme, the consortium has decided to introduce a drastic change in the mobility path. This is a consequence of the continuous monitoring of the outcome and comments by the students.

As a whole, the mechanism of quality improvement is well designed and implemented regularly, with the involvement of stakeholders from each partner institution. The newly established Industrial Board also offers significant potential to strengthen this process by providing systematic feedback on industry expectations, emerging skills needs, and the relevance of the programme's applied components.

IV- CONCLUSION

Overall, the IMLEX master's programme demonstrates a high level of compliance with the expectations of the European Approach for Quality Assurance of Joint Programmes. The evaluation outcomes presented in the previous sections converge on several key points:

(i) eligibility and status are fully established;
(ii) the learning outcomes are coherent, ambitious, and well aligned with the EQF/FQ-EHEA;
(iii) the pedagogical design is robust and genuinely joint, with a clear disciplinary progression from photonics and imaging to XR applications;
(iv) student support and resources are of high and consistent quality; and
(v) governance (AMB/QAB) is based on well-consolidated procedures (QASPH, KPI), ensuring evidence-based management and a documented culture of continuous improvement.

The programme's future trajectory is clearly defined and positive. Three structural developments are already in progress: (1) harmonisation of mobility pathways to ensure all students experience the three pillars (Imaging, Lighting, XR); (2) the gradual implementation of a European joint degree (while maintaining the Japanese national degree), involving the standardisation of graduation workflows and shared templates; and (3) the establishment of a new Industrial Board (IB) to strengthen industrial relevance (internship and thesis topics, prospective feedback, career events). As the IB is newly established, its effective involvement in programme governance now represents an important opportunity for consolidation and long-term enhancement. In the short term, consolidating the IB, publishing employability indicators, creating a unified portal (mobility rules, academic calendars, internship/job offers), and formalising a common tutor handbook are recommended.

These strengths are balanced by a few recurring areas of attention: some local variations in practice (mentoring, feedback mechanisms, pre-arrival arrangements), dependence on key individuals, and limited visibility of the employability and industry interface. The interviews provided insights not always captured by the formal criteria: the need for a truly unified information pathway (beyond local websites), the expectation for greater convergence in feedback and grading practices, variability in mentor engagement, and the shared demand, from both students and partners, for a centralised interface with industry.

A further point concerns programme sustainability. Although the current Erasmus+ funding cycle provides robust support and the consortium has developed strong structures (joint degree, harmonised mobility, emerging Industrial Board), long-term sustainability will require continued attention. The programme still relies on a limited number of key individuals, and the proportion of self-funded students remains modest. Strengthening institutional embedding, diversifying funding sources (including industrial co-financing), and increasing visibility to attract a broader applicant pool will be important steps to secure IMLEX's future beyond external funding.

Finally, one of the IMLEX programme's main original features is the involvement of a Japanese university. This not only contributes to the attractiveness of the programme, but also serves as an example of successful academic collaboration between Japan and the EU. Overall, the main administrative challenges were tackled with dedication and professionalism, and differences in communication approaches were embraced as an opportunity for innovation. Previous experience of running joint programmes and existing research collaborations provided a solid foundation for cooperation. The interviews revealed a rewarding learning experience for the involved staff and examples of good local practices were highlighted (e.g. laboratory-oriented theses in Japan). The panel expects that IMLEX will enable all the participating universities to further develop future academic or industrial partnerships.

The table below summarises the level of compliance of each standard and the overall compliance of the joint programme with the European Approach for quality assurance of joint programmes.

Standard	Assessment
1. Eligibility	Compliant
2. Learning outcomes	Compliant
3. Study programme	Compliant
4. Admission and recognition	Compliant
5. Learning, teaching and assessment	Compliant
6. Student support	Compliant
7. Ressources	Compliant
8. Transparency and documentation	Compliant with conditions
9. Quality assurance	Compliant
Programme as a whole	Compliant

STRENGTHS

- Internationally experienced academic and administrative staff across all partners, with existing collaborations and experience running joint programmes to build upon.
- Robust joint quality assurance framework with active AMB/QAB governance and regular monitoring.
- Coherent, interdisciplinary curriculum linking photonics, imaging, lighting and XR, with strong course-to-course integration and link with research field of every university.
- Application-oriented pedagogy combining labs, projects, company exposure and thesis webinars.
- Well-structured student support and mentoring mechanisms across institutions.
- Relevant choice of industrial partners and successful collaborations within the programme.
- Clear evidence of learning-outcomes achievement through diverse assessments and joint thesis defences.
- Overall jointness between Japan and EU partner universities. The recent progress toward a joint European Master's degree with parallel Japanese degree, strengthening programme integration.

WEAKNESSES

- Fragmented public information and documentation; absence of a unified "single source of truth."
- Limited visibility for industry stakeholders; no central platform for internships and job offers.
- Insufficiently published employability indicators; lack of systematic alumni outcome tracking.
- Uneven mentoring engagement and practices across partners.
- Variability in feedback practices and grading culture despite harmonisation efforts.
- Pre-arrival/onboarding processes not fully harmonised across institutions.
- Limited pedagogical collaboration and exchange between teaching staff across partner universities.
- Limited awareness and usage of recognition of prior learning (RPL) procedures.
- Operational challenges in implementing the joint diploma and aligning national systems.

RECOMMENDATIONS

- Establish a unified, public-facing programme portal consolidating procedures, deadlines, mobility rules and industry interfaces, including a central platform for internship topics, thesis proposals and job postings co-managed with the new Industrial Board.
- Finalise and standardise operational workflows for the joint diploma, including registry/database alignment and shared templates, fee structure, administrative procedure between EU and Japan.
- Formalise mentoring: common tutor handbook, clear roles, and inclusion of mentor feedback in annual QA reviews.
- Harmonise pre-arrival information (visa, housing, mobility sequencing) via a shared onboarding protocol.
- Reinforce assessment consistency through common rubrics and moderation, focusing on feedback quality.
- Encourage stronger pedagogical collaboration, for example through cross semester projects and regular exchanges between teaching staff from all partner institutions.
- Strengthen the Industrial Board's contribution by defining its operational role, integrating it into the annual governance cycle, and leveraging its input to keep the programme aligned with the latest innovations in this rapidly evolving field.
- Develop a more systematic alumni tracking (KPIs at 6/12 months) and engagement strategy to enhance visibility, employability follow-up, and support recruitment. Improve RPL communication and staff/student guidance; monitor RPL uptake annually.

V- COMMENTS OF THE CONSORTIUM

UNIVERSITY OF
EASTERN FINLAND

School of Computing

To:

Hcéres

Haut Conseil de l'évaluation de la recherche et de l'enseignement supérieur

19 rue Poissonnière

75002 Paris

Dear Hcéres President,

On behalf of the IMLEX consortium, I would like to thank Hcéres for conducting the audit of the Erasmus Mundus Master of Science in Imaging and Light in Extended Reality (IMLEX) in accordance with the European Approach for Quality Assurance of Joint Programmes. We appreciate the professionalism of the evaluation committee and the constructive nature of the overall process.

The consortium fully recognises the conclusions presented in the report. They are well aligned with the observations in our self-evaluation report and accurately reflect the dynamics during the online site visit.

We are particularly pleased that the evaluation committee explicitly acknowledges and commends several key strengths of the programme, in particular the successful collaboration between higher education institutions in Europe (Finland, France, and Belgium) and Japan; the high level of expertise of the academic and administrative staff across all partner institutions; and the meaningful involvement of carefully selected industrial partners. This external confirmation is highly valued by the consortium and reinforces our confidence in the overall quality and relevance of the joint programme.

Moreover, the report includes valuable recommendations for future-oriented development. The consortium is committed to taking these recommendations into account in its follow-up actions. In this context, several steps are already being undertaken. For example, to enhance the joint

programme awareness of the teaching staff and ensure optimal learning outcomes, teacher meetings will be organized regularly twice a year, with a wider participant base.
As a second example, we are happy to share that, as suggested by the expert panel, IMLEX will take action to establish a unified portal to exploit the industrial network fully: posting open vacancies, keeping track of alumni careers and streamlining the employment process of graduates. This portal will be planned in collaboration with alumni volunteers and the IMLEX Industrial Board.

We would like to thank Hcéres and the members of the evaluation committee once again for their thorough assessment and constructive feedback.

Yours sincerely,

Markku Hauta-Kasari

Markku Hauta-Kasari
IMLEX consortium leader
Vice Dean, Professor
Faculty of Science, Forestry and Technology
University of Eastern Finland

IMLEX

The evaluation reports of Hceres
are available online : www.hceres.fr/en

Evaluation of higher education and research institutions
Evaluation of research
Evaluation of study programmes
Evaluation of research organisation
International evaluation and accreditation

Evaluation · Research · Higher Education
Hcéres

19 rue Poissonnière
75002 Paris, France
+33 1 89 97 44 00

European Approach for Quality Assurance of Joint Programmes

ACCREDITATION PROPOSAL

Erasmus Mundus Master of Science in Imaging and Light in Extended Reality (IMLEX)

University of Eastern Finland (Finland)
KU Leuven (Belgium)
Université Jean Monnet (France)
Toyohashi University of Technology (Japan)

FEBRUARY 2026

High Council for the evaluation of research and higher education

SCOPE OF THE PROPOSAL

The Erasmus Mundus Joint Master **Imaging and Light in Extended Reality (IMLEX)** consortium has mandated the Hcéres to perform the evaluation of its Joint Master programme. The consortium is made of the following universities:

- University of Eastern Finland (Finland)
- KU Leuven (Belgium)
- Université Jean Monnet (France)
- Toyohashi University of Technology(Japan)

The evaluation is based on the European Approach for Quality Assurance of Joint Programmes[1], adopted in May 2015 by the Ministers of the European Higher Education Area and is compliant with the Standards and guidelines for quality assurance in the European Higher Education Area (ESG)[2].

Following a thorough evaluation process coordinated by Hcéres, the expert panel hereby recommends to grant accreditation to the Erasmus Mundus Joint Master IMLEX for six years.

The table below summarises the level of compliance of each standard and the overall compliance of the joint programme with the European Approach for quality assurance of joint programmes.

Standard	Assessment
1. Eligibility	Compliant
2. Learning outcomes	Compliant
3. Study programme	Compliant
4. Admission and recognition	Compliant
5. Learning, teaching and assessment	Compliant
6. Student support	Compliant
7. Ressources	Compliant
8. Transparency and documentation	Partially compliant
9 Quality assurance	Compliant
Programme as a whole	Compliant

Hcéres will communicate the evaluation report together with the accreditation decision to the quality assurance agencies from the countries represented in the IMLEX joint master. Hcéres has also invited the consortium to contact the respective national or regional accreditation bodies regarding the procedure required to accept this accreditation decision.

The following strengths, weaknesses and recommendations are given for further improvement of the programme:

STRENGTHS

- Internationally experienced academic and administrative staff across all partners, with existing collaborations and experience running joint programmes to build upon.
- Robust joint quality assurance framework with active AMB/QAB governance and regular monitoring.
- Coherent, interdisciplinary curriculum linking photonics, imaging, lighting and XR, with strong course-to-course integration and link with research field of every university.
- Application-oriented pedagogy combining labs, projects, company exposure and thesis webinars.
- Well-structured student support and mentoring mechanisms across institutions.
- Relevant choice of industrial partners and successful collaborations within the programme.
- Clear evidence of learning-outcomes achievement through diverse assessments and joint thesis defences.

[1] https://www.eqar.eu/assets/uploads/2018/04/02_European_Approach_QA_of_Joint_Programmes_v1_0.pdf
2 https://www.enqa.eu/wp-content/uploads/2015/11/ESG_2015.pdf

- Overall jointness between Japan and EU partner universities. The recent progress toward a joint European Master's degree with parallel Japanese degree, strengthening programme integration.

WEAKNESSES

- Fragmented public information and documentation; absence of a unified "single source of truth."
- Limited visibility for industry stakeholders; no central platform for internships and job offers.
- Insufficiently published employability indicators; lack of systematic alumni outcome tracking.
- Uneven mentoring engagement and practices across partners.
- Variability in feedback practices and grading culture despite harmonisation efforts.
- Pre-arrival/onboarding processes not fully harmonised across institutions.
- Limited pedagogical collaboration and exchange between teaching staff across partner universities.
- Limited awareness and usage of recognition of prior learning (RPL) procedures.
- Operational challenges in implementing the joint diploma and aligning national systems.

RECOMMENDATIONS

- Establish a unified, public-facing programme portal consolidating procedures, deadlines, mobility rules and industry interfaces, including a central platform for internship topics, thesis proposals and job postings co-managed with the new Industrial Board.
- Finalise and standardise operational workflows for the joint diploma, including registry/database alignment and shared templates, fee structure, administrative procedure between EU and Japan.
- Formalise mentoring: common tutor handbook, clear roles, and inclusion of mentor feedback in annual QA reviews.
- Harmonise pre-arrival information (visa, housing, mobility sequencing) via a shared onboarding protocol.
- Reinforce assessment consistency through common rubrics and moderation, focusing on feedback quality.
- Encourage stronger pedagogical collaboration, for example through cross semester projects and regular exchanges between teaching staff from all partner institutions.
- Strengthen the Industrial Board's contribution by defining its operational role, integrating it into the annual governance cycle, and leveraging its input to keep the programme aligned with the latest innovations in this rapidly evolving field.
- Develop a more systematic alumni tracking (KPIs at 6/12 months) and engagement strategy to enhance visibility, employability follow-up, and support recruitment.
- Improve RPL communication and staff/student guidance; monitor RPL uptake annually.

This decision together with the evaluation report will be published on the Hcéres website.

The evaluation reports of Hceres
are available online : www.hceres.fr/en

Evaluation of higher education and research institutions
Evaluation of research
Evaluation of study programmes
Evaluation of research organisation
International evaluation and accreditation

Evaluation · Research · Higher Education
Hcéres

19 rue Poissonnière
75002 Paris, France
+33 1 89 97 44 00