TITLE: SUMMARY MEASURING EVALUATION STRATEGIES IN MET

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Contents

1. EVALUATION AS A STRATEGIC GUIDE FOR MET

In Deliverable 3.2; *Measuring Evaluation Strategies in Maritime Education and Training* report, the currently used evaluation strategies were investigated. The investigation showed that currently used standard survey methods for validating educational packages and programmes mainly focus on what has happened in the past. There is no forward-looking evaluation strategy nor tool for maritime education and training (MET) available.

Based on the conclusions of this research, a new innovative evaluation strategy and related tool were developed. This new strategy and tool serve better the strategic adaptation of Maritime Education and Training (MET) to future, local and (inter)national trends and developments in the maritime transport sector.

This report describes the development of an appropriate strategic evaluation tool that measures the 'future-proof' fit of degree/programme/module characteristics. The development has taken place in four different steps:

1. The execution of a zero measurement, consisting of a set of specific surveys that addressed areas critical for evaluation in the current European MET landscape in order to:

   - highlight existing gaps and

   - reflect on the role of strategic evaluation;

2. The assessment of the results of various precursor SkillSea reports of Work Package 1 (WP1) in the light of the conclusions of step1;

3. The development of the new innovative tool that bridges the gap between the outcomes of current survey instruments (step 1) and the trends and developments in the maritime transport sector described in SkillSea WP1 reports (step 2), and which measures the 'future-proof' fit of degree/programme/module characteristics;

4. Testing the new tool in workshops.

The output of the deliverables from WP1 clearly describe the transformative impacts of current technological and sustainability trends, which create the need for specific new future-proof skills. These specific trends, in particular, are only limited reflected in the zero measurements.

At the same time, a changing environment requires MET-providing institutions of all types to embrace appropriate future-looking evaluation strategies, as much as possible, in close strategic collaboration with stakeholder associations and unions, to ensure the effective adaptation of their educational plans for equipping students with the necessary future skills.

Notably, the testing of the newly proposed evaluation approach incorporated extensive survey feedback from direct stakeholders. It confirmed the areas that need to be catered for in supporting the evolution of maritime careers amidst current industry trends. These measured trends were in line with the result of the WP1 deliverables D1.1.2 and D1.1.3.

2. GUIDING SURVEYS IN THE CONTEXT OF SKILLSEA

The zero measurements for the D3.2 deliverable used currently existing surveys to highlight existing gaps and reflect on the role of strategic evaluation in helping MET institutions to allow students to graduate with future-proof skills and, in this being able to adapt to future trends.

The survey consisted of three separate questionnaires for:

1) Students, mainly from EU/EEA MET,

2) Academic staff and

3) Rectors, Deans, and Heads of Departments (of EU and non-EU METs).

The key survey findings which highlighted areas requiring further action are summarised below:

Part 1: Students

- Existing standard provision is evaluated as promoting teamwork and critical thinking skills, whereas the survey revealed that IT and management skills are considered somewhat overlooked.

- Most students are still not familiar with Massive Online Open Course (MOOC) platforms.

- About half of the students stated concerns about mobility limitations across European MET-providing institutions.

- A non-negligible percentage expressed apparent dissatisfaction with some essential MET resources, especially with course materials and IT facilities.

Part 2: Academic staff

- The findings suggest that instructors believe that curricula should be updated more regularly.

- Future MET strategies should incorporate elements of cooperativeness, internationalisation, sustainable development, and lifelong learning.

- The majority of instructors identified a slow adaptation of both the STCW educational directions and educational institutions to the maritime industry changes.

- Sustainability is a critical strategic priority for MET-providing institutions but remains an unknown concept for about half of students.

- Most instructors are willing (but also reluctant) to use digital teaching tools.

Part 3: Administrators

- Digitalisation is an important trend for most administrators for MET-providing institutions, whilst digital transformation is an opportunity to attract more students.

- The main barriers to digital transformation include lack of familiarity, limited funding, resistance to change.

- Less than half of the administrators identify a clear digital strategy in their institutions, while current MET strategies are perceived as not highly dependent on digitalisation. Interestingly, the boards of the institutions generally support the adoption of a digital strategy.

- Administrators believe that their academic staff are generally knowledgeable enough to respond successfully to a digital strategy. However, there is also a significant percentage of respondents who appear sceptical about it.

- According to administrators, the essential technologies are virtual reality, cybersecurity, Internet of Things, and to a lesser extent, artificial intelligence and data analytics.

The key findings in terms of mismatches and gaps are summarised below:

- Overall, the findings of faculty, students and administration regarding the key issues are in line.

- At the same time, sustainability and digitalisation are indicated as additional areas for development, where strategic evaluation and measurement of coverage of key issues may be required in the future,

- There is an overall perception that the MET system may be overwhelmed by the increasing pace of change in its external environment. Therefore strategic evaluation and tools to measure targets and convergence towards them become essential.

- Finally, the evaluation showed the need for broader awareness about the United Nations Sustainable Development Goals (SDGs) to train maritime professionals adequately.

3. EVALUATING MET FOR FUTURE MARITIME TRANSPORT

The assessment of various precursor SkillSea reports from WP1 indicates that sustainability and digitalisation are perceived as the most significant and most urgently action requiring shipping trends. Nevertheless, the D3.2 survey findings revealed a slow(er) adaptation of MET curricula to digital trends and sustainability.

Within the already established frameworks concerning sustainability and digitalisation, MET-providing institutions can and should build on appropriate evaluation strategies and tools to accelerate their adjustment to developments and trends and meet future education and training needs, as well as supporting the industry in this shift through the provision of appropriately trained maritime professionals.

4. DISTANCE TO SHIPPING FUTURE: A MET EVALUATION TOOL

Most evaluation strategies currently do not address the radical and accelerating changes foreseen in the maritime industry. This prompts the creation of innovative strategic evaluation tools.

In the maritime industry's dynamic environment, strategic evaluation measurement can be conducted under two scenarios: a slow pace of change, which seems the least likely, or a fast pace of change. The Strategic Evaluation MET Tool (ST.E.ME.T.), developed in this deliverable, can be applied within the medium-term horizon of the strategy context defined in Deliverable 3.1 at four to five-year intervals in the first scenario and two to three-year ones in the second scenario.

Evaluation strategies rely on human judgment as input. The development of a streamlined evaluation process would make the best use of this kind of unstructured data. In this context, this report proposes a new tool based on the Analytic Hierarchy Process (AHP) general principles, an adaptable Multiple-Criteria Decision Making (MCDM) method based on hierarchies and relative comparisons of the attributes of alternatives, through the decomposition of decision-goals into criteria. In the MCDM terminology, a distinct attribute may be considered a criterion, while the AHP was adapted in the tool context to generate a workable index.

Two interactive workshops have been organised to validate the tool, one jointly with WP2 to pilot this work package's toolbox. Secondly, a session was organised with a group of maritime professionals (with both STCW and non-STCW training) who assessed the proposed SkillSea evaluation directions. This enabled the validation of the criteria and sub-criteria of the proposed Deliverable 3.2; *Strategic Evaluation MET Tool (ST.E.ME.T.)*, which is operable at a MET/course/module level and designed primarily for the administration of MET-providing institutions.

Under the WP3 mission, the tool is expected to help them measure the success of achieving strategic directions through targeted evaluation and adaptation to strategic directions. MET-providing institutions could benefit from ST.E.ME.T. and perform multiple evaluations of alternatives in their planning phase or identify areas of strengths or weakness in their curricula. The figure below illustrates the hierarchy and criteria validated through the workshops and session, combining standard educational evaluation elements with strategic ones through appropriate questions generating input for the criteria.
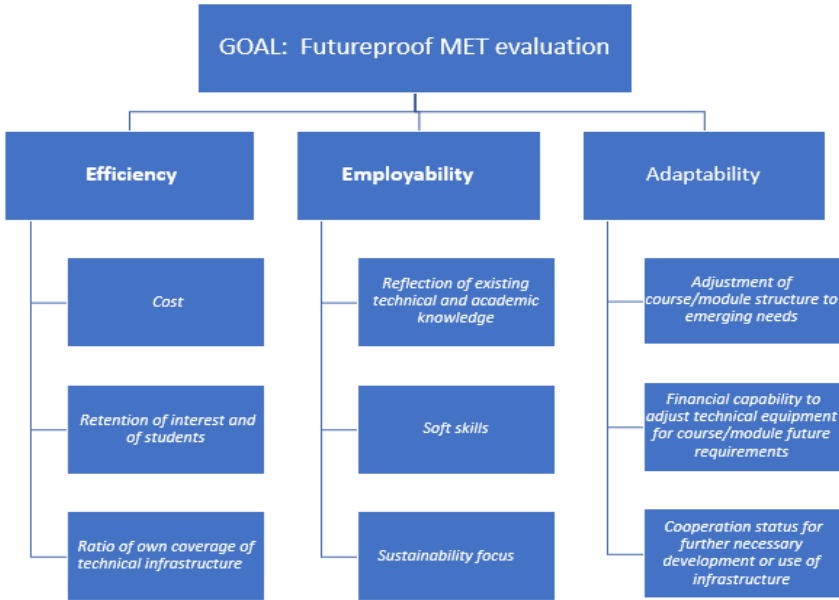
The ST.E.ME.T tool - created through an appropriate and adaptable hierarchy shown in the figure above - generates a final index used to assess the current degree of compliance with the METs' goal. The index value can monitor progress towards future-proof strategic goals over time, while the tool enables evaluation by relevant - internal and external - stakeholders.

The tool's use generates output, which proved to be valid as the analysis of pilot results per criterion group revealed 'opinions of the same wavelength'.

The tool is optimally used for internal evaluations through time and evaluation by different internal and external stakeholders. This allows the measurement and monitoring of progress towards future-proof strategic goals.

5. CONCLUSIONS

The maritime environment's transformative digital and sustainability trends call for more future-proof trend-adapted education and training beyond what is mandated by the current regulatory context. Appropriate evaluation strategies emerge as a vital instrument to realise this ambition. As all types of European MET-providing institutions need to adjust to the new circumstances, the use of appropriate industry-specific evaluation tools is required.

The key report conclusions are:

The proposed *Strategic Evaluation MET Tool (ST.E.ME.T.),* advanced by SkillSea in the context of WP3, can prove to be a strong future-orientated, strategic decision-making tool. STE.ME.T is user-friendly, transparent, expandable, and adaptable to evolving criteria and strategic evaluation periodicity. Furthermore, it is adjustable to varying scenarios of change in the technological and regulatory context of shipping. Its current version will be updated with new test results and then uploaded directly in the tools area of the SkillSea site.

Adopting pertinent criteria for strategic evaluation can help the European MET system adapt to sustainable development and industry needs.

Sustainability and digital skills emerge as the area's most open for improvement and alignment with industry developments. Administration survey findings also acknowledge the challenges along this path.

The develop tool attributes to the assessing step of the SkillSea Strategy wheel (see figure below).
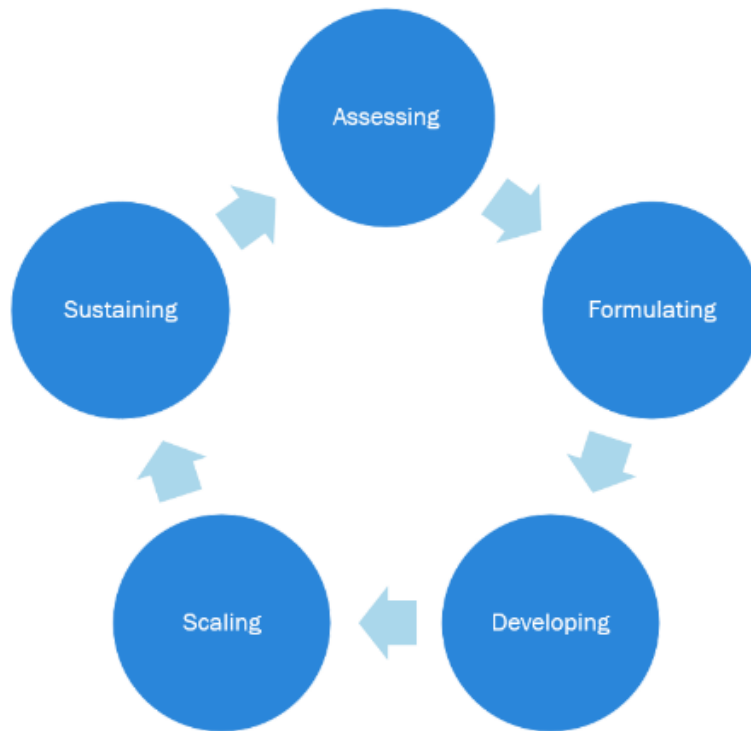
The assessing stage will involve regular meetings with all stakeholders to identify future skills and competencies needed. The assessment phase will, in effect, serve to repeat the current gap analysis undertaken by WP1. The STE.ME.T will give input to the meetings.