SAM webinars

SECTOR SKILLS STRATEGY IN ADDITIVE MANUFACTURING

Through the AM industrial professions: the required skills by the different sectors

22 October 2021

mates

AM in the Maritime Technologies Skills Strategy

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CETMAR
CENTRO TECNOLÓGICO DEL MAR

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of the European Union

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mates AT A GLANCE

A Skills Strategy for the future Maritime Technologies

PROGRAMME: ERASMUS+

INSTRUMENT: Sector Skills Alliances (SSA)

TOTAL BUDGET: €4.9 million

DURATION: January 2018 – December 2021 (48 months)

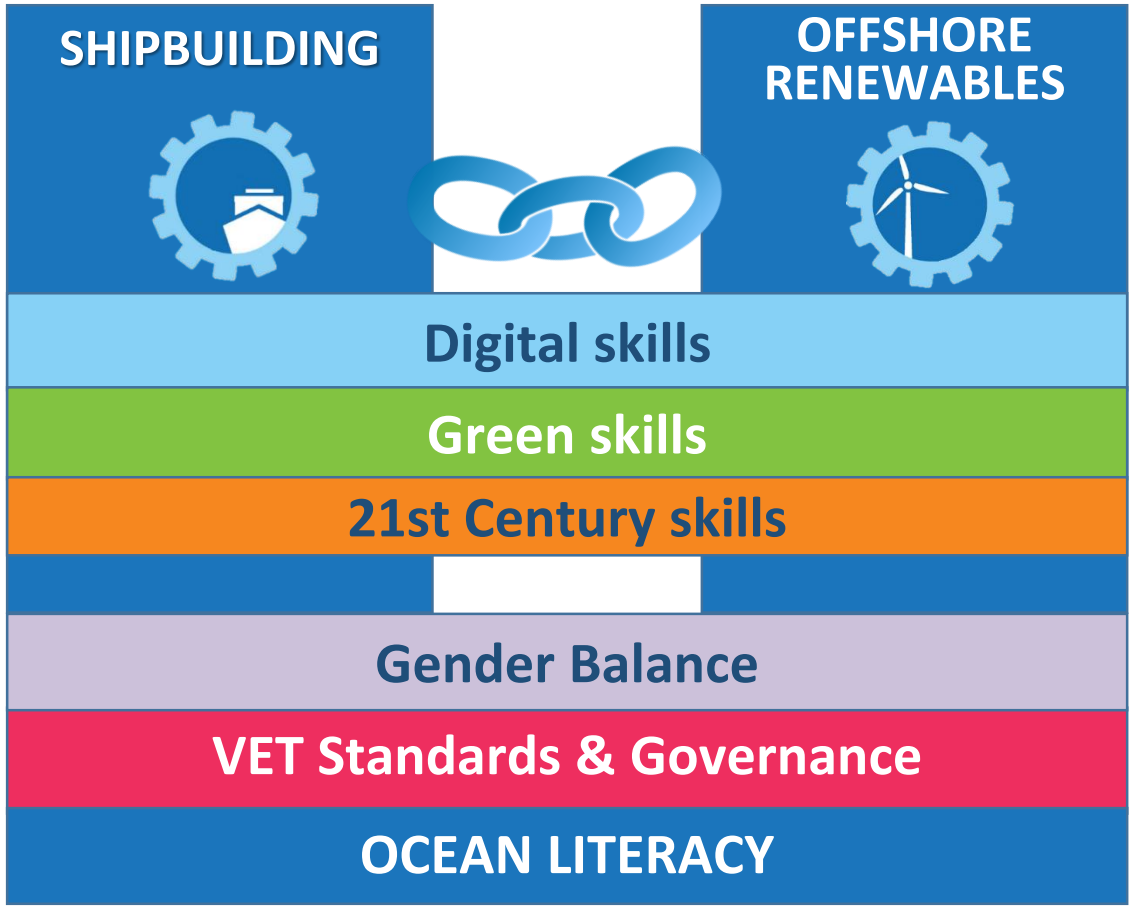
COORDINATOR: Centro Tecnológico del Mar (Fundación CETMAR), Spain

CONSORTIUM: 17 partners from eight countries

191 experts and stakeholders involved

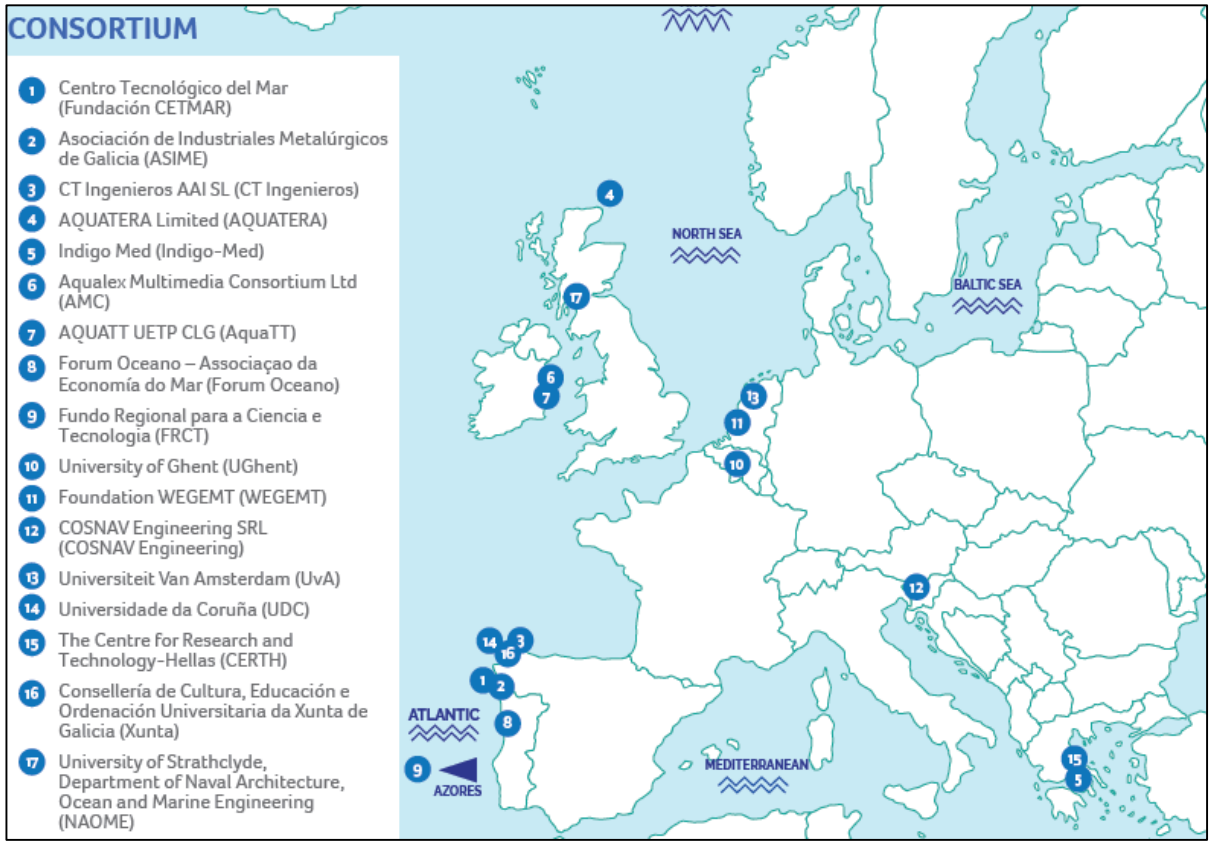
OBJECTIVE:

Match demand and supply of skills

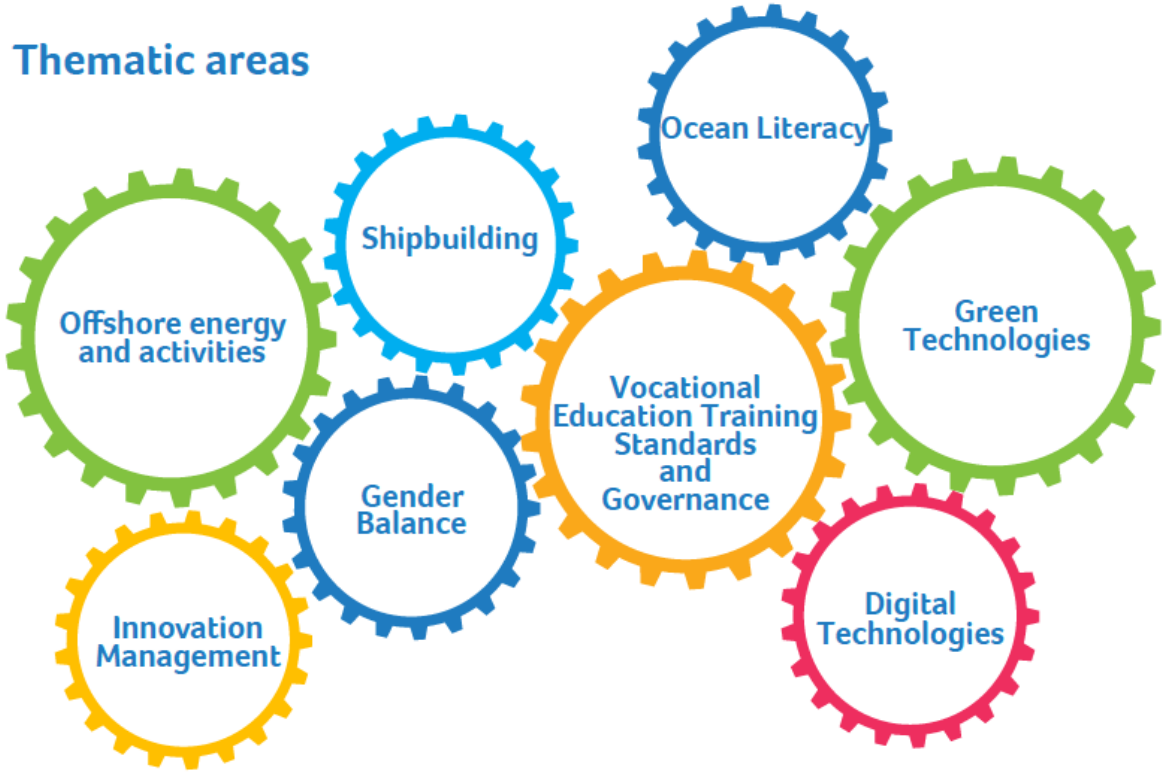


mates collaborative approach

Consortium



221 experts and stakeholders contributed to ensure a maximum uptake and impact of the strategy. Organized in 8 thematic groups: http://whowhomates.com/



mates approach to develop a strategy & action plan

Skills intelligence to great align educational opportunities and labour market by closing present and future skills gaps: **22 proposed Action Lines**

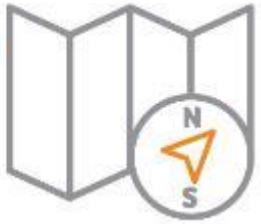
- Identified skills gaps
- Identified training offer
- Paradigm changes and future scenarios with most effective training methods
- Shortlisted Lines of Action

Validate actions and priorities suggested by the skills strategy **through 11 pilot case studies involving both education providers and industry**

- Stakeholder feedback/assessment of the implementation

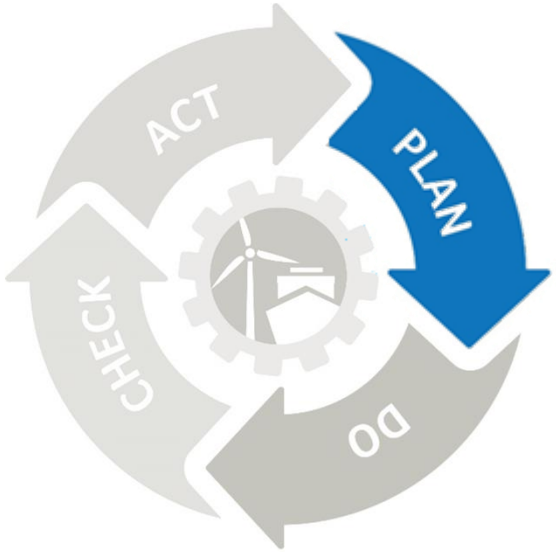
Critical review.
Feedback to the Strategy

VALIDATED Strategy and Ation Plan



2017 | 2018 – 2019 | 2020 – 2021 | 2021 | 2021

mates approach to develop a strategy & action plan



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AM in the present Maritime Technologies skills gaps

Skills demand: questionnaires, workshops, focus groups…

Upskilling and reskilling needs	These were found to relate mostly to the relevant implications of electrification and the use of alternative fuels in shipping, as well as of additive manufacturing.
Hard skills gaps addressing design	Knowledge of design software (e.g. CAD); 3D design; Data-based modelling; Knowledge of different production processes; Knowledge of all safety and regulatory parameters; Knowledge of any changes in relevant regulations and possible implications in workflows and conditions.

Hard skills	The following three hard skills were identified by the industry as most important: (i) *project management skills*, (ii) *engineering skills* (i.e. 3D design, offshore renewable energies systems etc.), and (iii) *digital skills* (i.e. data analytics, non-invasive monitoring, automation, robotics etc.).

Future trends in the Maritime Technologies

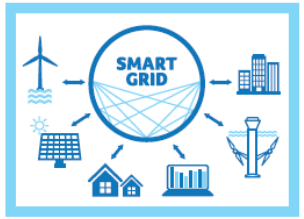
Emerging trends with an expected impact in the employment landscape and skills demand

Delphi questionnaire with 83 experts involved

SHIPBUILDING

- Digitalisation
- Drones
- Vessel automation, autonomy, advanced robotics
- Green retrofitting
- Alternative fuels renewable energies
- 3D printing

OFFSHORE RENEWABLE ENERGY



- Smart grid, sensors
- Energy storage
- Automation - Robotics

- Big data
- 3D printing

Manufacturing process whereby a design is used to create a physical product in 3D through a computer and a printer

AM in the future scenarios for Maritime Tech.

Agreement on the impact in jobs
> 60% > 70%

% Agreement becoming mainstream

Shipbuilding		OCUPATIONS Emerging	On the job training
2019	2025 2030		Life Long Learning
	3D Printing	3D printing technician	Life Long Learning Webinars+ on the job training MOOCs Blended apprenticeships – mobility Educational programs + Industry placements
Offshore Renewable Energy			**On the job training + other training providers**
	3D Printing	3D printing technician 3D modeller	Life Long Learning Webinars+ on the job training Blended apprenticeships – mobility Higher education courses On-line courses

P 17-20

Ranked last in both questions (become mainstream, 59%), impact on jobs (50 and 52%)

mates Lines of action in the baseline strategy

Priorities were identified for each sector and ranked during a consultation process with more than 50 experts.

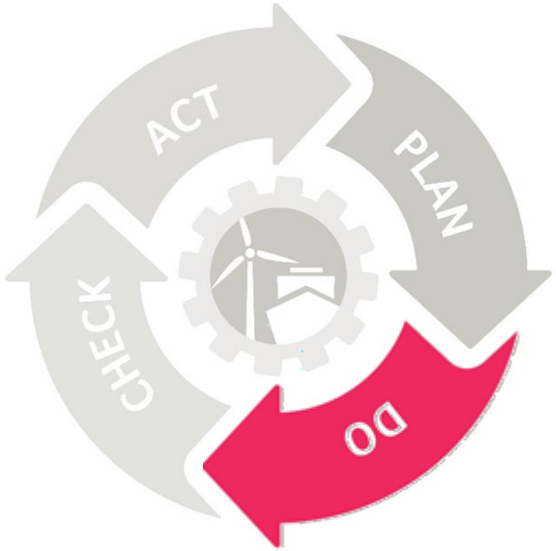
- 5 criteria used for the classification:
  - **Sector relevance**
  - **Political relevance**
  - **Urgency**
  - **Impact on employability**
  - **Attractiveness**

SB1	ORE1
SB2	ORE2
SB3	ORE11
SB7	ORE10
SB6	ORE3
SB5	ORE9
SB4	ORE12
SB8	ORE4
SB10	ORE5
SB9	ORE8
	ORE6
	ORE7

AM

1st priority to **training, re&up skilling workforce in the use of new digital technologies** (artificial intelligence, mechatronics, **3D printing**, IoT, cloud computing, big data)

mates approach to develop a strategy & action plan



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3 of 11 Pilot Experiences addressed Additive Manufacturing

Workers

Training programmes

Green technologies course (GR)

Green Technologies in the Maritime Sector

The Green Technologies in the Maritime Sector Course (GTMSC) aims to support green technologies and Read more...

CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS

HELLENIC INSTITUTE OF TRANSPORT

WEGEMT

ABS

Training Seminar on Additive Manufacturing and Risk Management in the SB and Ship Repair Sectors

Secondary Education Students & Teachers

Blended transversal learning

Maritime on the Loop of OL (ES, IT)

MOL2: Maritime on the Loop of Ocean Literacy

MOL2 aims to engage educational and training centres with cross-curricular skills related to Shipbuilding and Marine Technologies. Read

V REGATA SOLAR marine instruments 2020

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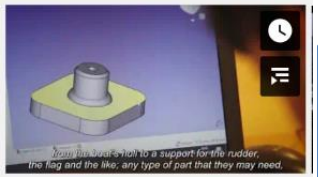
marine instruments

COSNAV ENGINEERING



MOL2 TRAINING: FREECAD AND 3D PRINTING (ENGLIS...

62 views • 7 months ago

ES: WS and video on Freecad and 3D printing to build small scale boats

IT: Disseminating an advanced measurement system: **the 3D Laser Scan**

Occupational Profiles

Definition of Occupational Profiles (DOP)

DOP: Definition of New Occupational Profiles

The main goal of this Pilot Experience is to define the new occupations emerging from the evolving technologies in the Offshore Renewable Ene...

Read more...

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AQUALEX MULTIMEDIA CONSORTIUM

#ESCO_EU

6 Skills, 9 knowledge items identified for the **19 occupations** most affected by 3D printing future trend

Revision transferred to ESCO

mates approach to develop a strategy & action plan

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4 workshops: MATES experts
4 meetings: Pact for Skills in the ORE WG

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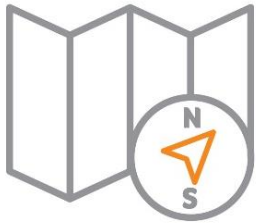
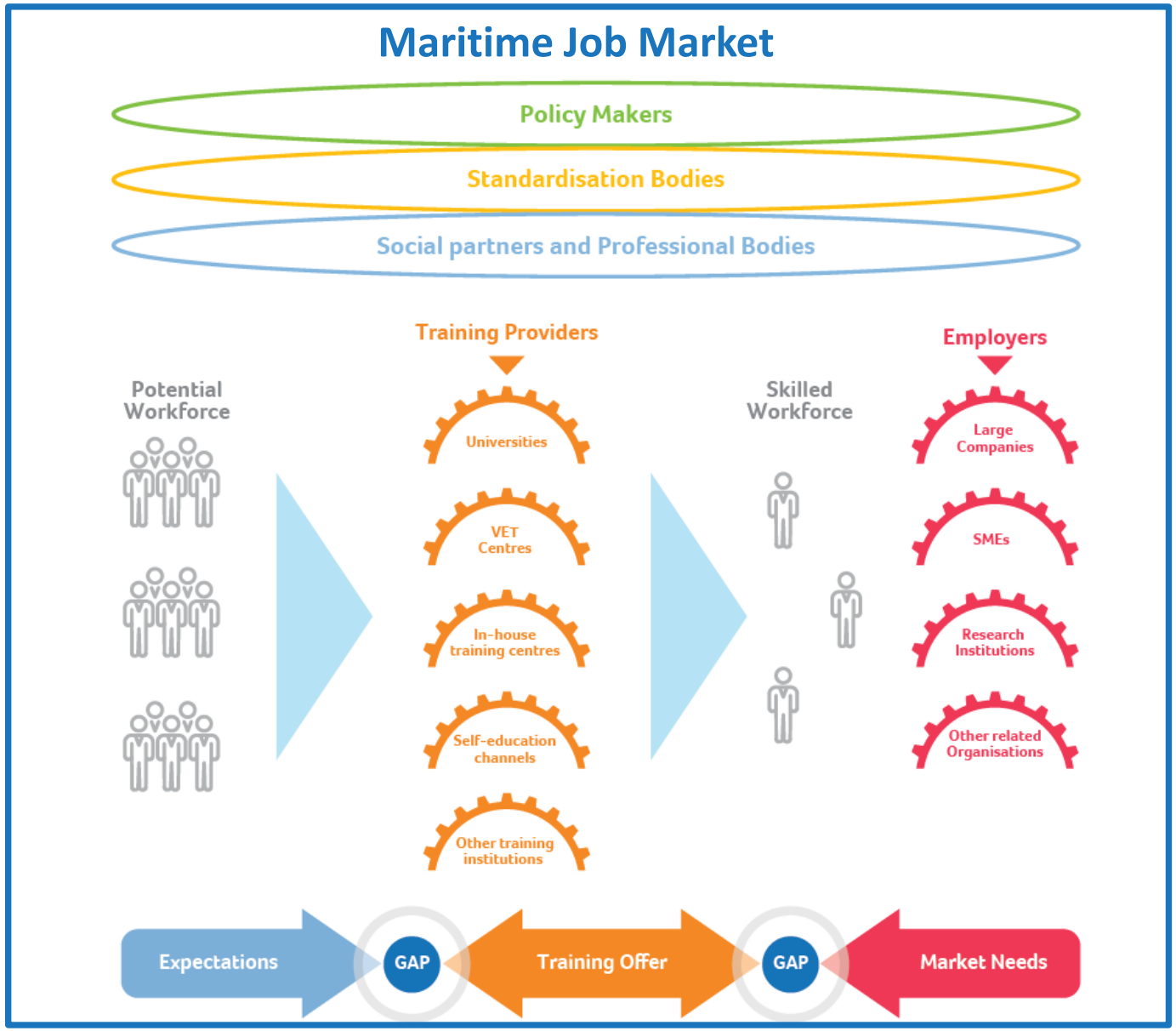


2017 | 2018 – 2019 | 2020 – 2021 | 2021 | 2021

mates recommendations Structure

P 26-27



Stakeholders and Actors

Policy makers: Public sector bodies as EC, EU agencies, Member States, National regional and local administrations.

Standardisation bodies: International, National and regional standard organisations addressing capacity building.

Social Partners and Professional bodies: Trade Unions, Industrial associations, Clusters, Academic associations.

Education and training providers: Universities, High-Education Institutions, Vocational training (VET), online training providers…

Employers: Large companies and SMEs, as well as organisations demanding professionals, including the Research community…

mates Recommendations

32 core recommendations, (split in 89 recommendations adapted to each group of stakeholders) which may be grouped in the following themes:

Cooperation among stakeholders

Attract talent

Promote skills intelligence

Improve Training offer

Mobility

Multipurpose skills

Digitalisation

ORE

Active learning

AM is present in the following recommendations

Improve Training offer

Updating Occupational Profiles with the new green, digital & transversal competences.	S
Delivering lifelong learning in engineering, digital and offshore operations skills.	SP, T, E
Integrating green skills content in trainings.	SP, T, E

Multi-Purpose Skills

Underpinning skills transferability & recognition between maritime sectors.	P, S, SP, E

Digitalisation

Developing Digital and Data competence frameworks for maritime industry	P, S, SP, T
Promoting ICT skilling programmes adapted for the maritime sector.	P, SP
Providing training in digitalisation for companies.	SP, E

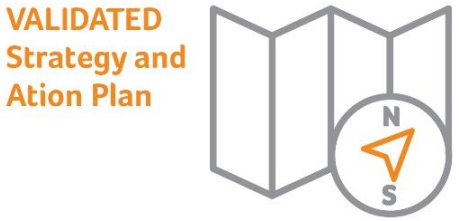
Promote Skills Intelligence

Continuing to promote key results of Sectoral Skills projects: open access repository.	P

Boost Cooperation

Enhancing education-industry cooperation.	P, SP, T, E

mates next steps



You are welcome to send us feedback to the first version of the Maritime Technologies Skills Strategy until the 30 November 2021

Contact: mates@cetmar.org
A final version of the report will be released during the first quarter of 2022.

Marine Training

All results transferred to the Marine Training Platform. 946 trainings addressing ORE and SB, classified (EQF level, Country, language…). All training materials produced.

MATES Skills Strategy is being transfered to the Large Scale Partnerships addressing Maritime Technologies in the **Pact for Skills**:

- Shipbuilding Partnership: coordinated by Sea Europe
- Offshore Renewable Energies (ORE) Partnership: Coordinated by CETMAR VISION

Organisations involved in the capacity building process for the ORE are invited to join us in the Pact for Skills. Contact: mates@cetmar.org

Thank You

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+ Info on the baseline strategy **REPORT**

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