



European Lightweight Clusters Alliance



European Lightweight Clusters Alliance

# Lightweight solutions for meeting SDGs

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*E-LASS meeting*

*November 18<sup>th</sup>, 2021*

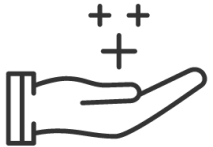
The logo for E-LASS features the text "E-LASS" in a bold, blue, sans-serif font. Above the letter "A" is a small orange graphic element resembling a stylized flame or a triangle.

# Objective

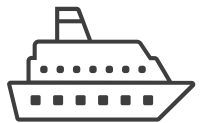
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- **What is ELCA network?** How was it developed?



- How does ELCA **create value for its members?**



- Some **use cases from our members** for the maritime sector.



## 1 *The ELCA network*

2 Activities providing added value

3 Use-cases for maritime sector

4 Conclusions

# 1. The ELCA network



## Multimaterial



### Materials

- Polymers
- Light metals
- Ceramics
- Composites



## Multidisciplinary

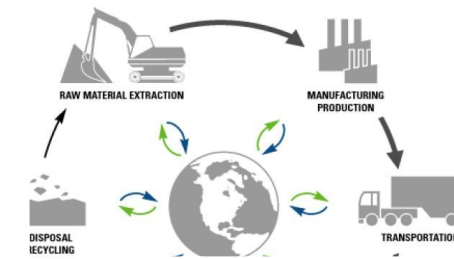


### Technologies

- Raw materials
- Characterization
- Modelling
- Functionalization
- Manufacturing
- Joining & assembly
- Recycling



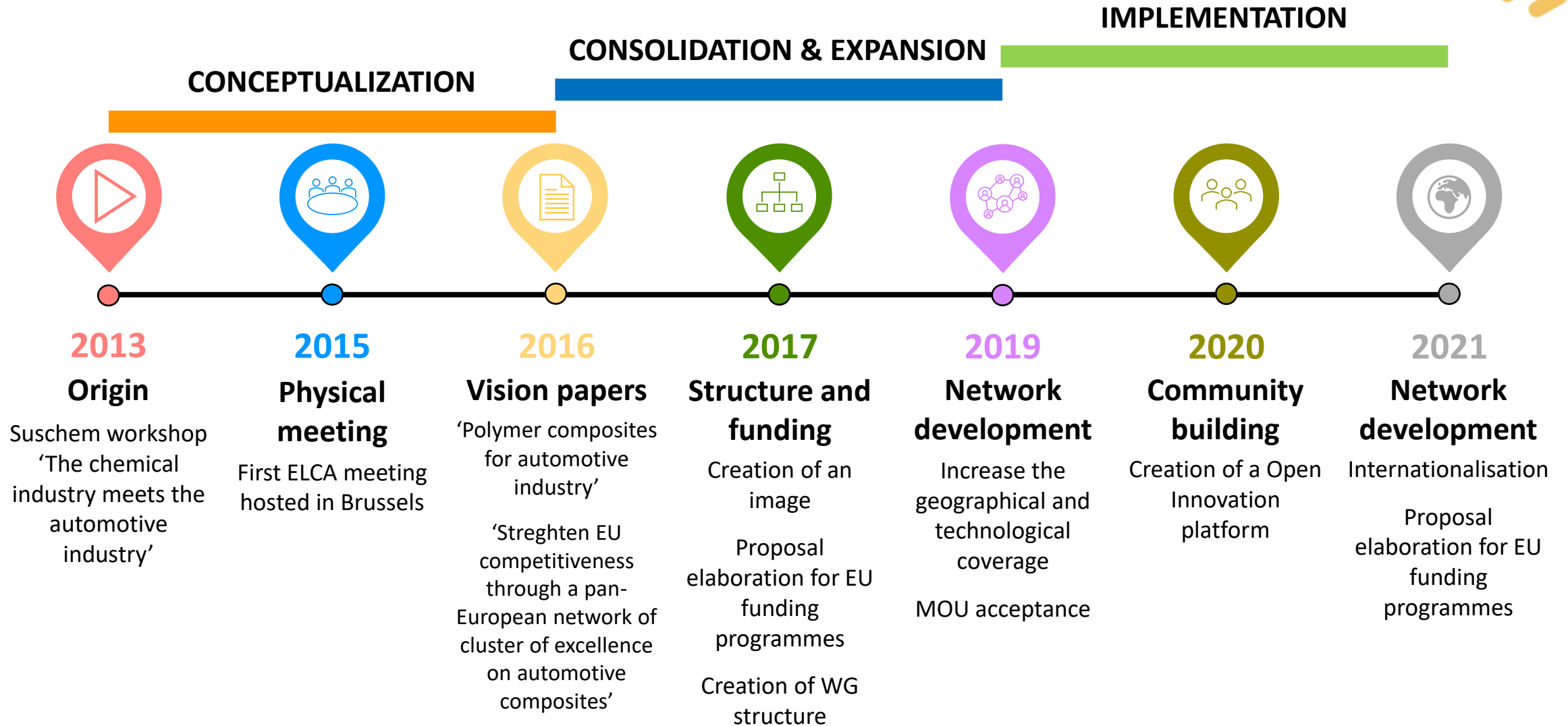
## Multisectoral



### Sectors

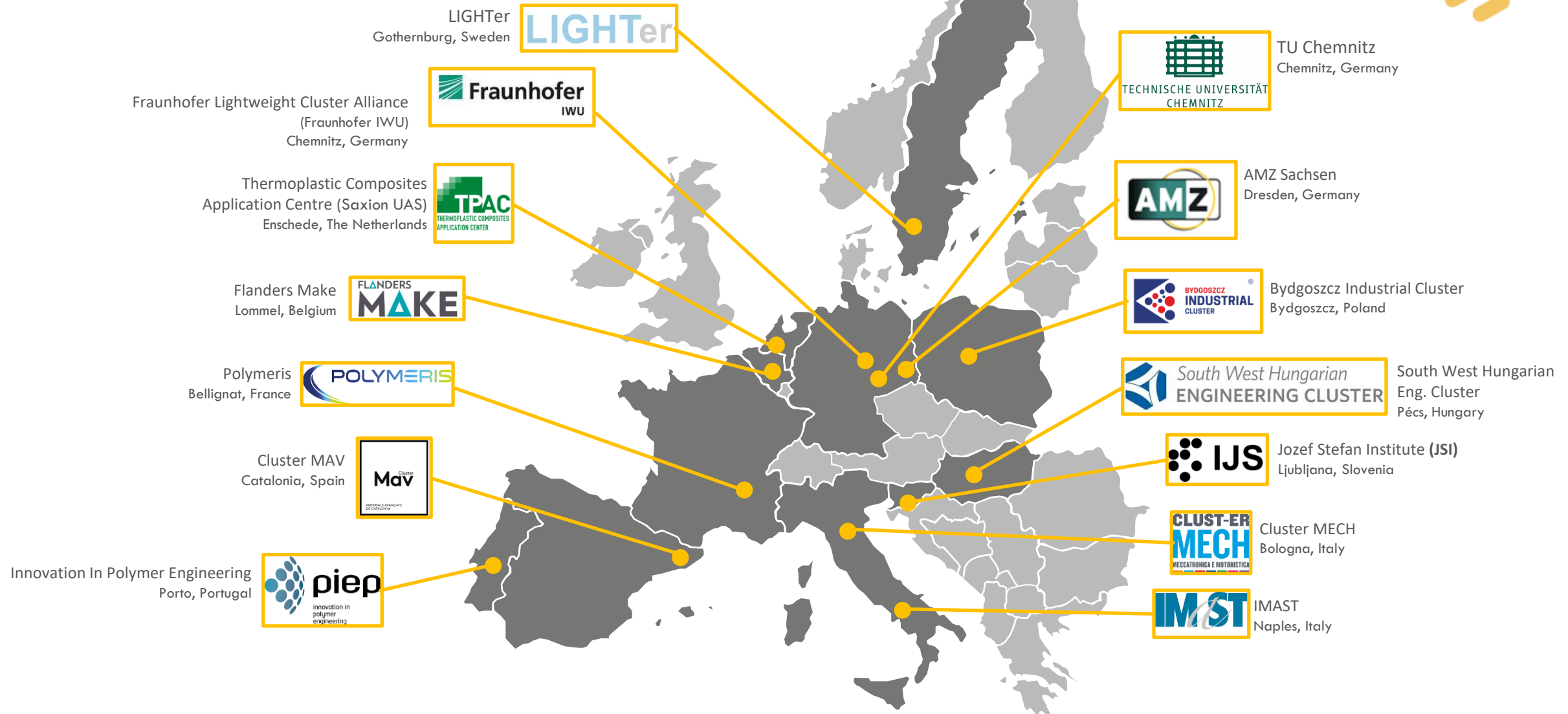
- Mobility
- Energy
- Building
- Industry

# 1. The ELCA network

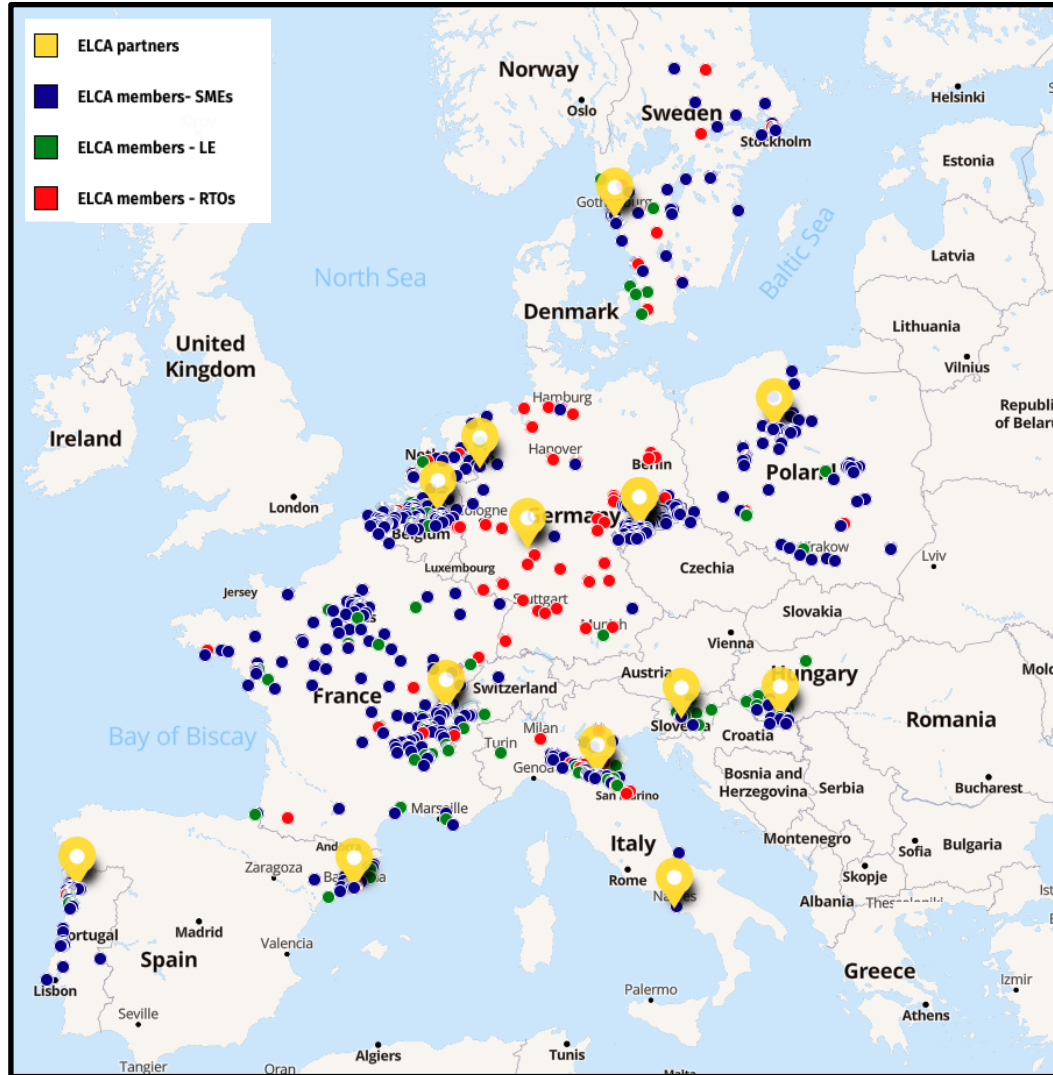




# 1. The ELCA network



# 1. The ELCA network



- 14 Nodes
- 11 Countries
- 667 SMEs
- 303 Large corporations
- 162 RTOs



# Outline

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1

The ELCA network

2

*Activities providing added value*

3

Use-cases for maritime sector

4

Conclusions

## 2. Activities providing added value



The screenshot displays the ELCA platform interface, which is annotated with several key features:

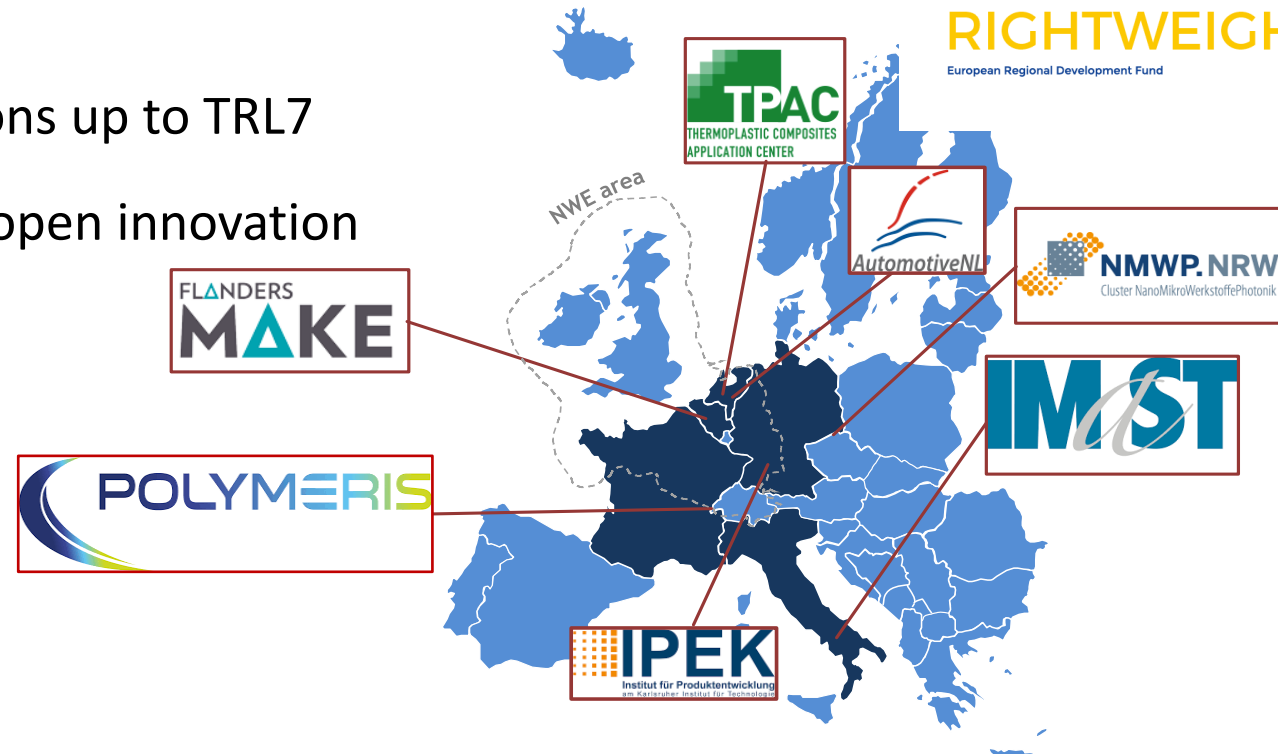
- Search:** A green box highlights the search bar and a dropdown menu with options: Search All, Innovation Calls, Technology Offers, Organization profile, and Users profiles. The annotation reads: "Use it to search daily content".
- Tools:** A blue box highlights the top navigation bar with icons for Home, My Activity, My Network, Messages, Notifications, and Resources. The annotation reads: "Share new opportunities to your network".
- Resources:** A green box highlights a sidebar menu with options: Innovation Calls, Technology Offers, Funding Opportunities, Job Offers, Events, Education, Articles, and Help Center. The annotation reads: "Access to main functionalities".
- Your personal profile:** A blue box highlights the user profile section for Helena Comas, Analyst, showing profile visibility status, response rate, and global views. The annotation reads: "Use it as a presentation to other partners".
- Your company profile:** A green box highlights the company profile section for BAX & COMPANY, showing a "Not posted" status and a "Publish profile" button. The annotation reads: "Use it to introduce you company or organization".
- Your interests:** A blue box highlights the "YOUR INTERESTS" section, listing Industrial Technologies, Textiles Technology, and Protecting Man and Environment. The annotation reads: "Show your interest with others".
- Add new members:** A blue box highlights the "ADD TO YOUR FEED" section, showing profiles of Juli Ramon and Marcos Ierides. The annotation reads: "Increase your contact list".
- View post of your interest:** A blue box highlights a post by BAX & COMPANY about a "European Project Manager Trainee". The annotation reads: "View post of your interest".

# RIGHTWEIGHT project for Interreg North-West Europe



*Novel advanced materials solutions for affordable lightweight to meet automotive and aerospace makers' needs (2020-2023)*

- Supports manufacturing SMEs in **automotive** and **aerospace**
- Upgraded new lightweight solutions up to TRL7
- Cross-sectoral, challenge-driven, open innovation
- SDGs:



Start: September 2020  
Duration: 3 Years.

# ELCA Internationalisation



## Consortium



AMZ (Automotive Supplier Network Saxony)



BIC (Bydgoszcz Industrial Cluster)



CLUSTER-MECH (Associazione Clust-ER Meccatronica e Motoristica)



MAV (Advanced Materials Cluster of Catalonia)



POLYM (Polymeris)

- Main sectors tackled: **automotive, aerospace & aeronautics, railway and maritime**
- SDGs:



Presented by **Bruno Martin**

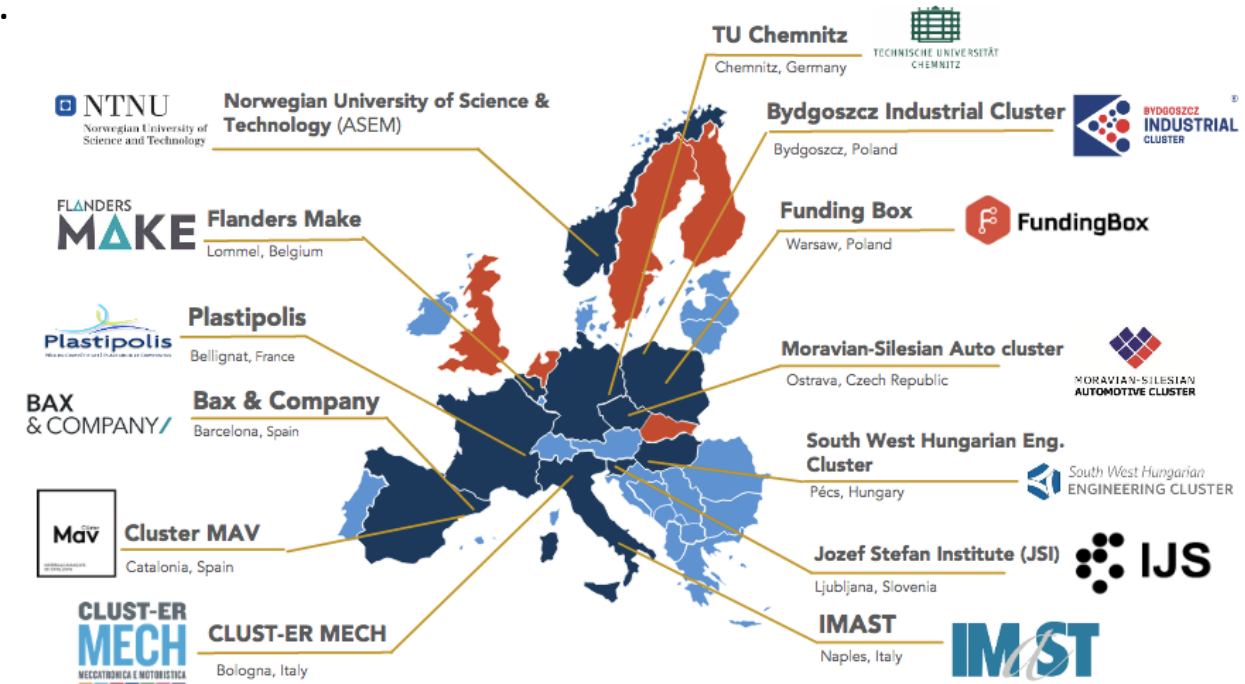


# AMULET project for INNOSUP-01 (H2020)



Create **new value chains** by fostering the **penetration of advanced materials** in different fields through cross-regional and cross-sectoral **knowledge exchange**.

- Supports manufacturing SMEs in **automotive, aerospace/aeronautics, energy and building**.
- Upgraded new lightweight solutions up to TRL7
- Cross-sectoral, challenge-driven, open
- SDGs:




Start: September 2021  
Duration: 3 Years.

## 2. Activities providing added value



In collaboration with ELCA members we organized two types of events:




### Workshops

Join the ELCA workshops!

The workshops will kick off the work of all 6 ELCA working groups (WG) in parallel sessions. Join the discussions and gain potential future collaborations with other ELCA members for 2021 and beyond. Registration details below.

\*open to ELCA members only, please see the event page for specific WG information\*


<https://lnkd.in/e8jqp3p>



**ELCA European  
Lightweight Cluster  
Alliance**

65 followers

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**ELCA  
WORKSHOP  
2021**

**Day 1** Monday 26th of April 2021 from 11:00-13:00  
**Day 2** Thursday 29th of April 2021 from 11:00-13:00

The first ELCA workshop of 2021 aims to kick off the work of all 6 working groups in parallel sessions. With the aim to foster potential future collaborations among the ELCA members.

**ELCA working groups**

 WG1 - Materials supply & development	 WG4 - Manufacturing & industry 4.0
 WG2 - Characterisation & modelling	 WG5 - Assembly/Joining
 WG3 - Design & smart function	 WG6 - Scrap separation & recycling

**What will the workshops involve?**





**ACMA**

Automotive Component Manufacturers Association of India

### Webinars

Automotive Component Manufacturers Association of India (ACMA)

+ 850 manufacturers : represent 85 % of the auto component industry's turnover in India.

> 230

16 experts presenting





**elca**

European Lightweight Clusters Alliance

**LIGHTWEIGHT  
TECHNOLOGIES FOR  
AUTOMOTIVES SUPPLIERS**

**May 25th 2021**

14:30-16:30h Indian time (GMT+5.30); 11-13h (GMT+2)



## 2. Success stories 2020-2021



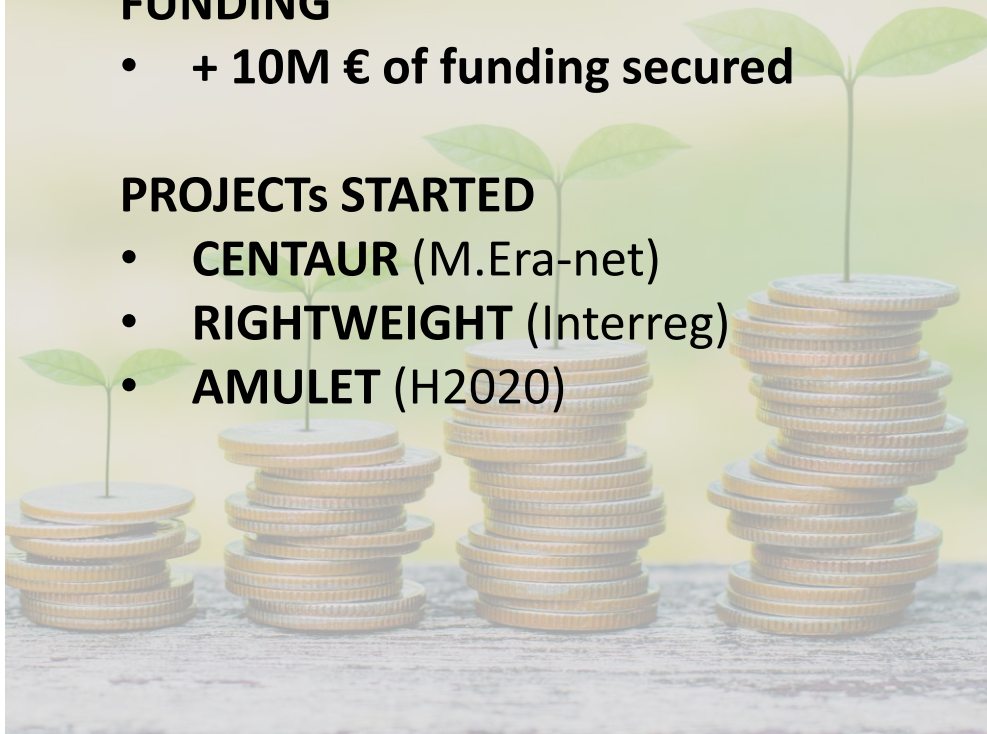
### RESEARCH & DEVELOPMENT

#### FUNDING

- + 10M € of funding secured

#### PROJECTs STARTED

- CENTAUR (M.Era-net)
- RIGHTWEIGHT (Interreg)
- AMULET (H2020)



### BUSINESS DEVELOPMENT

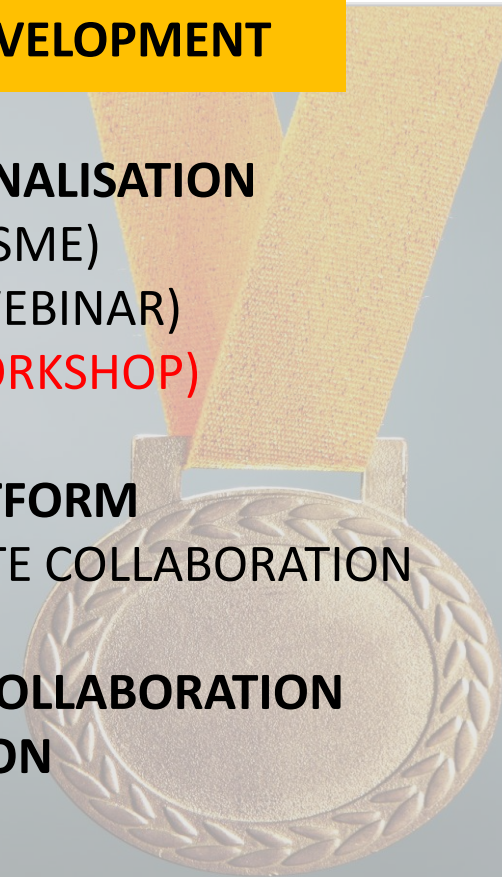
#### INTERNATIONALISATION

- ELCA (COSME)
- ACMA (WEBINAR)
- **EBTC (WORKSHOP)**

#### ONLINE PLATFORM

- STIMULATE COLLABORATION

**+ A LOT OF COLLABORATION  
& PROMOTION**



# Outline

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The ELCA network

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Activities providing added value

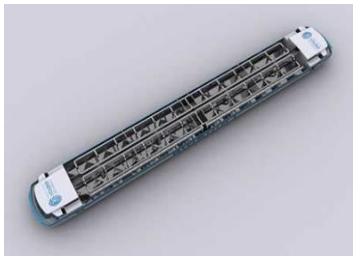
3

*Use-cases for maritime sector*

4

Conclusions

### 3. Use-cases for the maritime sector



Sandwich with aluminum foam core and aluminum cover sheets (AFS)

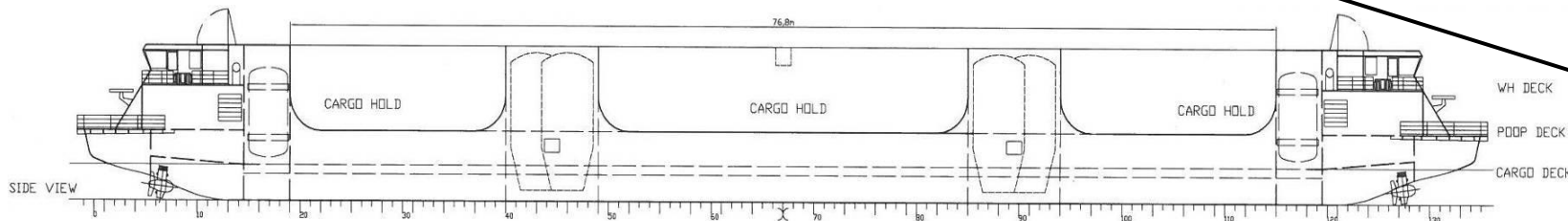


Polyurethane sandwich with substructure of AFS

**Demonstrator ship segment**  
Scale 1 : 4

**Result:**  
Mass reduction about 25 %

Sandwiches with aluminum foam core and steel cover sheets

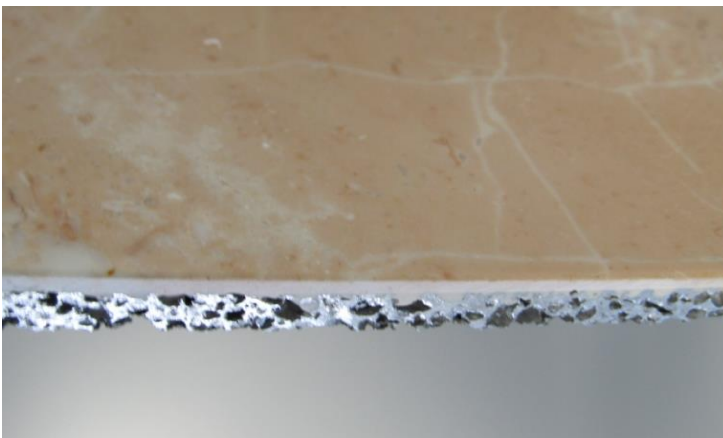


### 3. Use-cases for the maritime sector

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#### Foam with marble for ship floors

**Structure:**

- Aluminium foam-Marble-Compound (glued)

**Application:**

- Floors in ships

**Advantages:**

- light (30% of a massive marble plate)
- thin
- sound absorption
- more flexible

**Maximum dimensions :**

- 1200 x 600 mm<sup>2</sup>



Dr.-Ing. Thomas Hipke



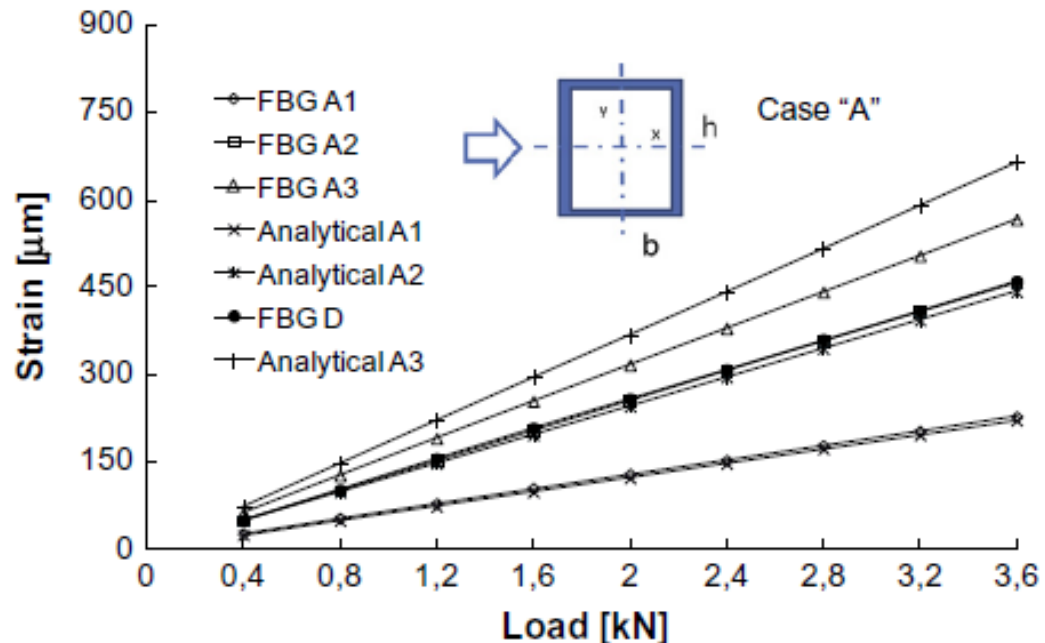
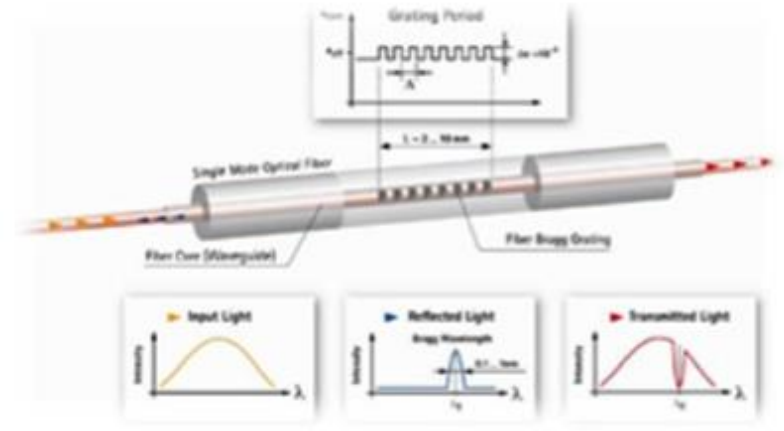


### 3. Use-cases for the maritime sector

In field strain monitoring of Marine composite structures (i.e. mast, boom, spinnaker pole)

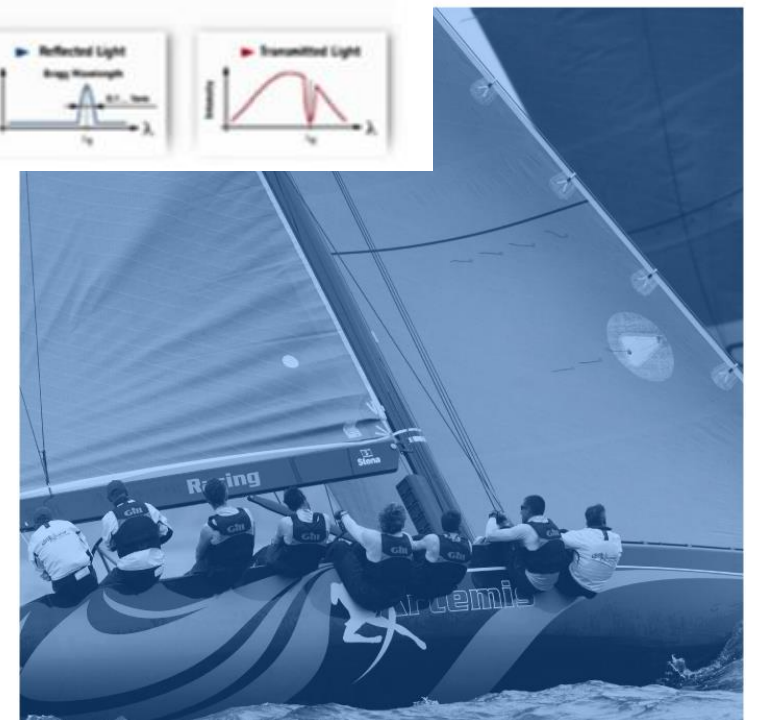
#### Research activities:

- Distributed or concentrated (FBG) optical fibers strain sensors;
- Embedding of optical fibers at the manufacturing stage in the inner section;



**CLUST-ER  
MECH**  
MECCATRONICA E MOTORISTICA

**BUCCI**  
COMPOSITES



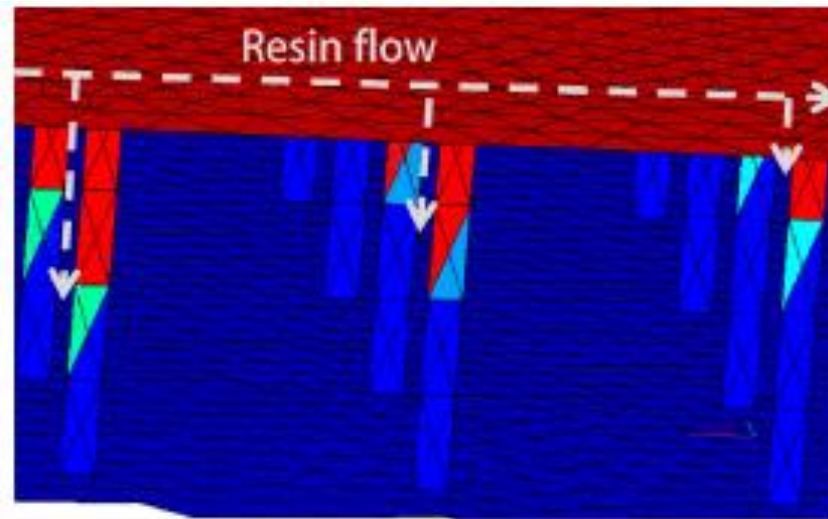
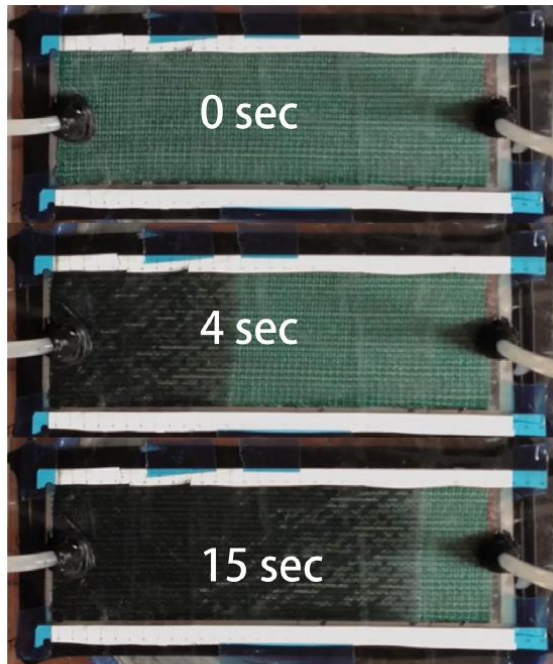
### 3. Use-cases for the maritime sector



## Transition from hand layup to infusion manufacturing technologies for Marine structures

### Research activities:

- Low viscosity resin selection and characterization;
- Testing of fabrics/layup permeability;
- Simulation of the infusion process (ESI Composite)



ht Clusters Alliance

Technology	Hand layup	Vacuum Assisted Resin Infusion					
Resin System	(1) Polyester Resin Orthophthalic	(2) Epoxy Resin for Infusion	(3A) Polyester Resin	(3B) Polyester Resin	(4) Polyester Resin Orthophthalic	(5) Polyester Resin iso-neopentyllic	(6) Vinylester Resin
Vacuum	-	0,5 bar	0,5 bar	0,1 bar	0,5 bar	0,5 bar	0,5 bar
Process							
Maximum Temperature							



ALMA MATER STUDIORUM  
UNIVERSITÀ DI BOLOGNA



Prof. Lorenzo Donati  
Manufacturing Technologies

Fig. 4. Flow front advancing through test mould.



# Outline

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*Conclusions*

## 4. Conclusions

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- Lightweight is a hot topic and a driver
- Cross-fertilization, internationalisation
- The ELCA network offers an opportunity



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