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for Sustainable and Efficient Ships**
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Deliverable D06.1

1st official draft of PUDF and Business Plan

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Abstract

Main authors of the chapter: Arnold de Bruijn, NMTF

In order to streamline the communication flow from and to external parties a communication strategy has been developed. The goals pursued are manifold (general dissemination, general exploitation measures and preparation of technology market uptake, identification of concepts for future innovation in the maritime industry, development of rules and regulations...), and the corresponding measures have to be customised to the suitable target groups.

This deliverable consists of mainly 2 parts, one part describing the communication strategy, including dissemination activities, and one part builds on the initial exploitation plan, providing guidance for the demonstrator cases to create their own exploitation- and business plan and prepare for technology market uptake.

Deliverable 6.1 presents:

- A more detailed description of the Communication Management Group (CMG)
- For each goal a communication plan in tabular format, providing an overview of the communication to WHOM (target group), WHY and WHAT (the message), HOW and by WHO (responsible Work Package and Partners)
- An overview of anticipated dissemination activities
- An overview of cooperation with other projects
- A template structure for an exploitation plan per demonstrator case
- A template structure for a business plan per demonstrator case



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Involved partners

No.	Short name	Full name	Name and contact info of persons involved
30	NMTF	Netherlands Maritime Technology Foundation	Arnold de Bruijn
2	CMT	Center of Maritime Technologies	Matthias Krause Grit Ladage Sri Lestari Maharani

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Contents

Abstract	2
Document data.....	3
List of symbols and abbreviations	6
1 Executive summary	7
1.1 Problem definition.....	7
1.2 Technical approach.....	7
1.3 Results and achievements.....	7
1.4 Contribution to RAMSSES objectives	7
1.5 Exploitation and implementation.....	8
2 Introduction.....	9
3 Communication Strategy.....	10
3.1 Relation to the project’s strategic objectives.....	10
3.2 Structures and Bodies for Dissemination and Exploitation Activities	10
3.2.1 Communication Management Group	10
3.2.2 Innovation Management.....	11
3.3 Implementation of the Dissemination plan	11
3.3.1 Improving Public Perception and Societal Image.....	11
3.3.2 Developing a Maritime Materials Innovation Platform	12
3.3.3 Improving Competitiveness and Market Uptake	14
3.3.4 Remove external Barriers towards Application	15
4 Dissemination Activities (CMT, BAL)	16
4.1 Technology Transfer Group (TTG)	16
4.1.1 Approach	16
4.1.2 Status and outlook.....	16
4.2 Maritime Advisory Group.....	17
4.2.1 Approach	17
4.2.2 Status and outlook.....	17
4.3 RAMSSES Project website (CMT).....	19
4.4 Project Flyer (CMT).....	19
4.5 Construction of a Sustainable Network (CMT).....	19
4.5.1 E-LASS	19
4.5.2 Others (LinkedIn...).....	20
4.6 Project video.....	20
4.7 Cooperation with projects.....	21

Deliverable D06.1

4.7.1	FibreShip.....	21
4.7.2	GasVessel.....	21
4.7.3	ADAM4EVE (finished project).....	22
4.7.4	QUALIFY.....	22
4.7.5	DE-LIGHT Transport.....	23
5	Initial Exploitation Plan.....	24
5.1	Initial Exploitation plan from proposal phase.....	24
5.1.1	Commercial use of results.....	25
5.1.2	Non-commercial use of results.....	25
5.2	Process and timeline of monitoring RAMSSES impact.....	30
5.3	Templates for developing Exploitation plan and Business plan.....	30
5.3.1	Template for Exploitation Plan.....	30
5.3.2	Template for Business Plan.....	31
6	References.....	32
7	Indexes.....	33
7.1	Index of tables.....	33
7.2	Index of figures.....	33
8	Annexes.....	34
8.1	Annex A: Public summary.....	34

List of symbols and abbreviations

CKB	Common Knowledge Repository
CMG	Communication management Group
DoA	Description of Action
DC	Demo case
HSLA	High Strength Low Alloy Steel
IPR	Intellectual Property Rights
MAG	Maritime Advisory Group
PUDF	Plan of Use and Dissemination of Foreground knowledge
QCG	Quality Control Group
SG	Steering Group
TTG	Technology Transfer Group
WP	Work package

1 Executive summary

Main authors of the chapter: Arnold de Bruijn, NMTF

1.1 Problem definition

In order to streamline the communication flow from and to external parties a communication strategy has been developed. The goals pursued are manifold (general dissemination, general exploitation measures and preparation of technology market uptake, identification of concepts for future innovation in the maritime industry, development of rules and regulations...), and the corresponding measures have to be customised to the suitable target groups.

1.2 Technical approach

This deliverable consists of mainly 2 parts, one part describing the communication strategy, including dissemination activities, and one part builds on the initial exploitation plan, providing guidance for the demonstrator cases to create their own exploitation- and business plan and prepare for technology market uptake.

1.3 Results and achievements

Deliverable 6.1 presents:

- A more detailed description of the Communication Management Group (CMG)
- For each goal a communication plan in tabular format, providing an overview of the communication to WHOM (target group), WHY and WHAT (the message), HOW and by WHO (responsible Work Package and Partners)
- An overview of anticipated dissemination activities
- An overview of cooperation with other projects
- A template structure for an exploitation plan per demonstrator case
- A template structure for a business plan per demonstrator case

1.4 Contribution to RAMSSES objectives

According to the DoA, the strategic objective of RAMSSES is to obtain recognition and an established role for advanced materials in the European maritime industry.

To achieve this, the RAMSSES project follows a two-way strategy, aiming to

- strengthen European leaders (represented in the project consortium, see ch.3.3) by demonstrating full feasibility and by validating the technical and economic properties of innovative material solutions in close to-reality applications and to
- add value to a wider European maritime community, by improving the exchange of information, technology transfer, extending the knowledge base and developing ways to a faster approval

Deliverable 6.1 will contribute to this objective by organizing the inbound and outbound communication and dissemination activities towards a large number of target groups. In addition to that the exploitation plans and business plans developed by the demonstrator cases will help extending our knowledge base and focus on improving the market uptake of innovative materials.

1.5 Exploitation and implementation

The results described in deliverable 6.1 cannot be directly applied, but provide guidance and instructions on sharing RAMSSES results.

2 Introduction

Main author of the chapter: Arnold de Bruijn, NMTF

Dissemination and exploitation of RAMSSES's results is a major part of the project's communication strategy. Chapter 3 refers to the initial strategy that was outlined in the DoA, and reports about the steps undertaken so far in terms of putting it into practice and monitoring that process.

In RAMSSES, dissemination is not only understood as all activities related to outbound information flow in order to spread results of the project to the desired targets, but also to organise an inbound information flow to the RAMSSES consortium, with the aim to improve the work of the project, to create future ideas for material innovation and to enhance the related knowledge base with external data and information. An overview on dissemination activities and further plans is given in chapter 4.

Chapter 5 refers to the initial exploitation plan that was outlined in the DoA (2.2.4) and provides guidance for the demonstrator cases to write an exploitation plan and business plan for their particular application, encouraging the demonstrator work packages to share their expected results and how they envisage the results to be used in commercial and non-commercial manner. These plans will be updated during the project to monitor progress and to allow us to determine the impact of the RAMSSES project as a whole.

3 Communication Strategy

Main author of the chapter: Matthias Krause, CMT

3.1 Relation to the project’s strategic objectives

On the one hand, the internal information flow in the RAMSSES consortium is organised in order to ensure successful financial and administrative project management and achievement of the technical objectives of the project in an efficient manner. This part of the communication strategy is discussed in the relevant Deliverables by WP01 and WP02.

The Deliverable at hand discusses those parts of the communication strategy which are aiming at the third strategic objective of the project:

“Objective 3: RAMSSES will contribute to support the innovation capabilities of the consortium members and the maritime sector” Annex 1, Part B, p. 7

As indicated in Figure 1, this strategy mainly addresses information flow from and to external parties and interaction with these. The goals pursued are manifold (general dissemination, general exploitation measures and preparation of technology market uptake, identification of concepts for future innovation in the maritime industry, development of rules and regulations...), and the corresponding measures have to be customised to the suitable target groups.

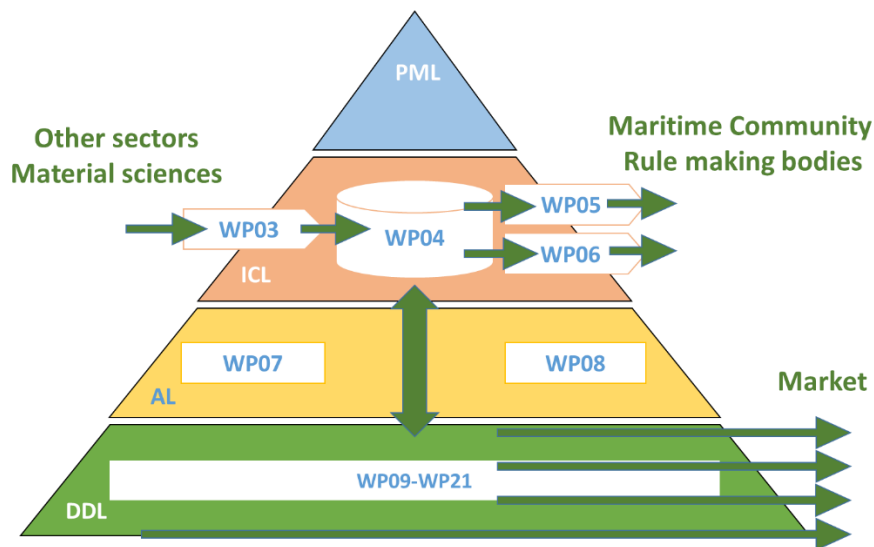


Figure 1: External information flow (Annex I, Part B, p. 30)

3.2 Structures and Bodies for Dissemination and Exploitation Activities

3.2.1 Communication Management Group

*„All external communication will be facilitated and monitored by the CMG...“
(Annex I, Part B, ch. 2.2.3)*

The RAMSSES Management structure as described in the DoA foresees a Communication Management Group (CMG) which is supposed to convene every six months. The CMG kick-off meeting, organised as a Webex conference, took place on November 22nd, 2017 to agree on the terms of the CMG’s work, its composition and next steps. The most important decisions:

- The CMG consists of all members of the WPs 03...06 (not only their leaders).
- CMG will monitor the implementation of the project’s dissemination plan.
- Particular dissemination activities can be implemented by any RAMSSES partner. All members of the Consortium are encouraged to disseminate activities and results in the project. They are obliged to support the CMG in performing dissemination measures.
- CMG will report to the SG on a regular basis.

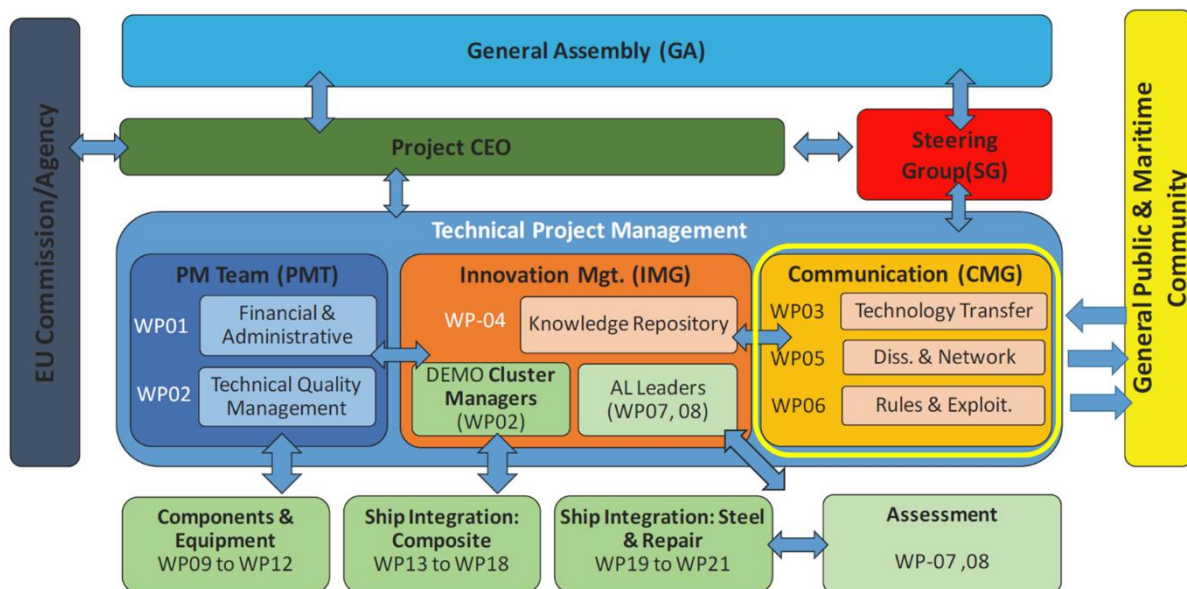


Figure 2: The CMG (highlighted yellow) in the RAMSSES Management structure

3.2.2 Innovation Management

The core strategic element for the innovation management is the Common Knowledge Repository (CKB). The CKB will not only provide a means to store information that needs to be shared between the RAMSSES partners, but also data and information that stems from inbound communication (e.g. Technology Transfer Group) and which is intended for outbound information flow (e.g. input to rule making bodies). Thus, the CKB is clearly a strategic instrument for the project’s dissemination and exploitation measures.

The repository is being developed in WP04. The Deliverable D04.1 (due month 8) will discuss the CKB’s plan and structure, while D04.2 (due month 12) will introduce the first online version.

3.3 Implementation of the Dissemination plan

The tactical approach to handle the external communication was outlined in the table ‘initial dissemination plan’ in the DoA, Part B. Four main goals of dissemination were identified, and to each goal one or more target groups were allocated. The following sub chapters 3.3.1 till 3.3.4 contain the dissemination plans, including updates and brief summaries on further plans and activities already initiated. More information about the most significant activities which have been initiated or completed are documented in the forthcoming chapters 4 and 5.

3.3.1 Improving Public Perception and Societal Image

3.3.1.1 Plan

Table 1: Dissemination Plan summary – goal ‘Improving Public Perception and Societal Image’

To WHOM	WHY and WHAT	HOW	WHO*
General public (European citizens), Science community	Make wider community aware of impact of EU research, improve public image of maritime, enable contact to project	Project website; press releases; innovative media (e.g. LinkedIn); project dissemination material; interviews in local media and science magazines; project videos	WP05: <u>CMT</u> , RISE

3.3.1.2 Comments on status and further plans

Ongoing – website launched, LinkedIn group established, two press releases were issued (project kick-off, first RAMSSES/E-LASS conference). Interviews will be given in a later stage. First of a series of RAMSSES demo case videos was produced; a concept for a general project video was prepared.

3.3.2 Developing a Maritime Materials Innovation Platform

3.3.2.1 Plan

Table 2: Dissemination Plan summary – goal ‘Developing a Maritime Materials Innovation Platform’

To WHOM	WHY and WHAT	HOW	WHO*
Maritime RDI Community	Inform on work and results, receive feedback on technical developments, foster knowledge and result uptake	Publication in specific newsletters, research and professional magazines; annual joint events with other initiatives, SMARTYards network, WATERBORNE platform, exchange and discussion in the ISSC expert group V.3 <i>Material and Fabrication</i>	WP05: <u>CMT</u> , SP, NTUA, AIMEN
Other RDI project consortia	Use synergies, e.g. joint resources, uptake of suitable external developments, exchange of results, cooperative work	WATERBORNE and EFFRA** networks and websites, participation in CSAs, joint workshops, TTG with confirmed partners from other sectors; cross-project partner networks, joint conferences, cooperation agreements using SMARTYard templates	WP03, 05: <u>CMT</u> , NETCOMP, FHG, TNO, NMTF, SP (E-LASS), AIMEN, BV
School graduates, Students & Young professional	Attract young people to RDI and maritime, inform about job opportunities, improve technical skills for under- and post graduate students	Training material, presentations at universities, network of WEGEMT, twinning projects, support to EM-Ships actions, internal placements for students	WP05: <u>NTUA</u> , <u>CMT</u> , AIMEN, SP

To WHOM	WHY and WHAT	HOW	WHO*
Other sectors, material sciences	Get information on latest development and available new solutions, initiate cooperation	Dedicated Technology Transfer Group with confirmed partners from rail, road, aero and materials, annual reports to GA, analysis of solutions for maritime	WP03: CMT, BV, NETCOMP. FHG et al

3.3.2.2 *Comments on status and further plans*

Target group ‘Maritime RDI community’

Ongoing – Several project partners’ newsletters introduced RAMSSES; a couple of general articles about the project were issued in trade magazines; CMT and others gave presentations to some of the technical working groups or associations they are represented in. Direct contact to the members of the SMARTYards network is sought. Together with the the ISSC Committee V.3 and the FIBRESHIP project, RAMSSES organised a workshop on qualification of composites. A set of measures towards new approaches for approval of new materials was agreed and published in the 3-annual ISSC report in 2018.

Target group ‘Other RDI project consortia’

Ongoing – Various contacts have been made, cooperations with several consortia have been initiated and will be intensified in the future; RAMSSES uses the E-LASS conferences to organise presentations of other projects and to meet other consortia.

Target group ‘School graduates, Students & Young professional’

Plans being elaborated – The lead responsible partner for dissemination towards this target group, NTUA, has identified the following plans:

- Dissemination activities to the academic community
 - 1) NTUA can create an initial mail list of contact persons in various university naval architecture departments worldwide (not including those participating in RAMSSES).
 - 2) The above list will be circulated to all RAMSSES partners in order to be populated with more entries.
 - 3) Once the list is finalized, RAMSSES informative material (info about the project and possible forthcoming project related events) can be mailed to all persons of the list (this can be done either centrally – e.g. from CETENA or CMT – or from a WP5 partner).
 - 4) Establish a contact with WEGEMT (European Association of Universities in Maritime Technology and Related Sciences) and its secretary general George Smyrnakis, providing him periodically with RAMSSES informative material and asking him to disseminate it within the WEGEMT members.
- Dissemination activities to the scientific community
 - 1) Collect contact information from all RAMSSES partners about their naval architects national professional organizations or about other similar organizations (like for example the Hellenic Institute of Marine Technology).
 - 2) Contact both the above organizations and other similar ones like the Society of Naval Architects and Marine Engineers (SNAME), the Royal Institution of Naval Architects (RINA), the Institute of Marine Engineering, Science and Technology (IMarEST), the

Deliverable D06.1

Chinese Society of Naval Architects and Marine Engineers (CSNAME), the Confederation of European Maritime Technology Societies (CEMT), periodically sending them RAMSSES informative material.

Target group ‘Other sectors, material sciences’

Ongoing – Please refer to chapter 4.1 about the Technology Transfer Group.

3.3.3 Improving Competitiveness and Market Uptake

3.3.3.1 Plan

Table 3: Dissemination Plan summary – goal ‘Improving Competitiveness and Market Uptake’

To WHOM	WHY and WHAT	HOW	WHO*
Ship owners and Operators	Inform potential customers about the benefits and potentials, receive feedback to the work	Direct contact with end-users (consortium), Maritime Advisory Group with confirmed ship owners, dedicated information on leaflets, website, presentations, network of ECSA and national associations	WP03, 06: <u>DSNS</u> , BV, RISE, CMT
European Shipbuilding & Equipment Community	Increase critical mass on the market, foster wider commercialisation of results, receive information on latest technical developments, establish cooperation	Dedicated workshops, conferences, flyer and video using the E-LASS, SMARTYards, and WATERBORNE network, SEA Europe, national associations, SME network of CMT, Cooperation agreements using available templates	WP05: <u>CMT</u> , DSNS, BV, AIMEN, NTUA, RISE et al
Investors, Banks, Insurance	Provide awareness for sustainable financing and life cycle cost efficiency	Direct contacts as established in previous projects (e.g. JOULES, LeanShips), focused articles and presentations	WP05, 06: <u>NMTE</u> , RISE, TNO, BV

3.3.3.2 Comments on status and further plans

Target group ‘Ship owners and Operators’

Ongoing – Please refer to chapter 4.2 about the Maritime Advisory Group.

Target group ‘European Shipbuilding & Equipment Community’

Some first activities – Multipliers (associations of ship operators) were successfully invited to the MAG; CMT presented the RAMSSES project to some of the technical working groups for members in the German shipbuilders and offshore association (*VSM-Arbeitskreise*)

Target group ‘Investors, Banks, Insurance’

Deliverable D06.1

Some first activities – presentation to be held at the Dutch association of insurance companies to establish first connections (located near NMTF).

3.3.4 Remove external Barriers towards Application

3.3.4.1 Plan

Table 4: Dissemination Plan summary – goal ‘Remove external Barriers towards Application’

To WHOM	WHY and WHAT	HOW	WHO*
Maritime rule maker (class, flag states, IMO)	Feed results and approach of RAMSSES (Fast Track to Approval) into upcoming rules and regulations, receive feedback	Direct contact through consortium partners; common position papers, project guidelines, project data base, participation to IMO meetings, communication to flag states, IACS, SEAEurope (NGO in IMO)	WP06: <u>NMTF</u> , BV, RISE, CMT
Cross-industry standards (ISO)	Transmit findings and needs to standards to increase critical mass across sectors	Technology Transfer Group, dedicated partners working in standard committees on EU and national level, common positions, regular information	WP06: RISE, FHG, NETCOMP, TNO, BV
Research Admin. and funding authorities	Ensure consideration of achievements and RDI needs for future research programmes	Reports to COM, WATERBORNE ETP, EFFRA**, EU associations, contact with national governments	WP05: <u>CMT</u> , RISE, TNO, NTUA, AIMEN et al

3.3.4.2 Comments on status and further plans

Target group ‘Maritime rule maker (class, flag states, IMO)’

Partners of WP06 have strong connections and close relationship with class societies, flag states and IMO. WP06 will continuously interact with them to discuss the development of rules and regulations and feed the results of RAMSSES into the rule making process. More details will be given in the following deliverables:

- D06.2 Report on Rules and Policy Interaction; IPR issues (PM12)
- D06.3 Updated Report on Rules and Policy Interaction; IPR issues (PM24)
- D06.5 Final Report on Rules and Policy Interaction; IPR issues (PM45)
- D06.7 Final recommendations to rules and policy makers (PM48)

Target group ‘Cross-industry standards (ISO)’

RAMSSES will monitor/follow the activities at the TTG to identify if there are any ISO/non-IMO standards that can be beneficial for the maritime area to adopt or refer to for maritime applications. Plans for further activities aiming at developing cross-industry standards will be developed during the project.

Target group ‘Research Admin. and funding authorities’

Not commenced yet – detailed plan and first activities will be reported in a later stage of the project

4 Dissemination Activities (CMT, BAL)

Main author of the chapter: Matthias Krause, CMT

4.1 Technology Transfer Group (TTG)

This chapter provides a summary about the TTG and first related activities. More details will be given in the Deliverables:

- D03.2 *First report on Technology Transfer & Future concepts* (PM12)
- D03.3 *Updated report on Technology Transfer & Future concepts* (PM24)
- D03.4 *Final report on Technology Transfer & Future concepts* (PM 48)

4.1.1 Approach

In aviation and automotive industry, the application of advanced material like composites or HSLA had been used long time before the maritime industry started to use it. Hence, it is important to learn from other industries to minimize the trial and error time during the exploration of the new materials. The objective of this dissemination activity is to facilitate the technology transfer between maritime industries with material research in other industries (automotive, rail, aeronautics, etc).

In order to meet the dissemination objective, the Technology Transfer Group (TTG) which consists of the experts from other industries needs to be formed. The TTG has the responsibility to provide the information on possible technologies that could be applied in the maritime industry. Moreover, it will also advise RAMSSES partners on the advanced materials or production processes which had been researched by them, and enlighten the audiences of the advantages/disadvantages from technical, economical, and sustainable point of views.

The dissemination process will be applied by organizing public event, workshop, and providing reports from the RAMSSES TTG members, and the works are related with WP 03. A minimum of 4 reports which are related and adaptable in maritime industry need to be provided. TTG members also need to send their experts to attend the workshops which are arranged by the consortium, and to present their reports to public audiences or to RAMSSES partners.

4.1.2 Status and outlook

During the first eight months of the RAMSSES project, CMT created the invitation for potential members and successfully recruited them to join the TTG. They are mostly coming from research organizations with background from aviation, automotive, rail, and material science. The list of TTG members can be seen in Table 5. The involvement of TTG members on internal dissemination activities will start in the 3rd RAMSSES General Assembly meeting in Sweden. Depending on the particular focus of the member and/or the industry they represent, the members will either present the topic of 'quick assembly technology' or 'innovative production technology'. It is expected that during the workshop the presenter and the audience will discuss the possibility, the advantages/disadvantages of the process in maritime application.

The next step of this dissemination activities is planning another 3 workshops to discuss further topics. Till now, the consortium identified a list of favourite topics that could be concentrated on in future workshops:

- innovative materials
- rules & regulation
- circular economy

Table 5 Technology Transfer Group members

Company	Industry	Topic of Knowledge transfer
ZAL Zentrum für Angewandte Luftfahrtforschung GmbH	Aviation	Composite material, fuel cell, Factory of the future, maintenance, repair, and overhaul
Das virtuelle Fahrzeug, Forschungsgesellschaft mbH (Virtual Vehicle Competence Center, V₂C₂)	Automotive & Rail	Advanced materials for safe and environmentally friendly vehicles in the road and rail
NewRail	Rail	Application of new and lightweight material
InfraCore (RAMSSES partner)	various	Advanced material in multi industries application, e.g. construction industry

4.2 Maritime Advisory Group

This chapter provides a summary on about the MAG and first related activities. More details are given in the Deliverable D03.1 *Installation of Advisory Group and Collaboration Plan* (PM06).

4.2.1 Approach

In order to improve the research result in RAMSSES, the requirements on new material and technologies should involve the knowledge on market innovation and opinions of the end user. Hence, the RAMSSES consortium decided to create a Maritime Advisory Group (MAG) which involves ship owners/operators and their associations. Besides inbound information flow (i.e. gaining input for RDI purposes), the MAG will also be a means to organise outbound flow (i.e. informing potential customers about the project's benefits and their potential). Thus, the MAG is a contribution to implement the dissemination strategy towards the corresponding target group.

For the purpose of keeping the detailed work in RAMSSES confidential and meeting the objectives of MAG, separate workshop for MAG members will be conducted annually. Moreover, the works are connected with dissemination and network activities in WP 05 where appropriate. However, the MAG members will not be able to attend the General Assembly meeting or other meetings which can show them the detailed process in the RAMSSES project. If MAG members have interest with the results in RAMSSES project to be applied in their product or process production, they can do direct communication with RAMSSES work package partners. Hence, it is necessary for work package partners to introduce the RAMSSES project to their customers or suppliers and suggest them to join the MAG. Moreover, there will be 4 MAG workshops during the RAMSSES project. MAG members are required to attend at least 3 workshops and send their expert in the topic selected for each workshop.

4.2.2 Status and outlook

After eight months of RAMSSES project, the WP leaders had given suggestions on the potential members of the MAG. Subsequently, CMT with helped from WP leaders, created and circulated an invitation letter to join the MAG, along with some basic information about RAMSSES. In the results there are 9 companies which have confirmed their participation as a member of the MAG. They are mostly coming from ship owners/operators and related associations. The RAMSSES CMG considers this a sufficient amount to start a useful cooperation. However, latecomers can still be accepted to join the MAG. The list of RAMSSES MAG can be seen in Table 6.

The first MAG workshop will be conducted on June 2018 in St. Nazaire, France. Prior to that, a Memorandum of Understanding will be exchanged to formally agree on the terms of cooperation.

Deliverable D06.1

Also, a RAMSSES dossier will be given to MAG members before the workshop (including confidential information, after it has been agreed by the consortium), and a questionnaire to investigate the MAG members' expectations. Questionnaire answers will be analysed to prepare the first MAG workshop as expected by MAG members.

After the workshop in St Nazaire, feedback from MAG to RAMSSES partners will be evaluated and three further MAG workshops will be planned.

Table 6 Maritime Advisory Group (MAG) members

Company	Ship types/industries represented
DANAOS Shipping	Container vessels
European Community Shipowners' Associations (ECSA)	Various (association)
Pro Danube	Various inland water vessels and infrastructures (Danube river)
Royal Netherlands Navy	Patrol vessels
STENA	Ferries (Baltic sea)
Styrsöbolaget	Ferries (municipal/coastal areas)
Royal Caribbean Cruises LTD (RCCL)	Cruise vessels
Carnival Maritime	Cruise vessels
Caledonian Maritime Assets Ltd	Ferries and infrastructures (Scotland)

4.3 RAMSSES Project website (CMT)

The RAMSSES project website was launched in November 2017. It provides an overview of the project and its single demo cases and will be updated on a continuous base. For more in-depth information the deliverable D5.1 provides a detailed report on the website.

4.4 Project Flyer (CMT)

During the proposal stage of the RAMSSES project as one of the dissemination measures it was decided to create a project flyer. Within the first internal meetings with the dissemination team it was decided to create a project poster instead of a flyer. This decision derives from the fact that a flyer on large scale, as a poster is, provides a range of advantages compared to a flyer. One major decision driver was the participation of RAMSSES on the Waterborne booth at the Transport and Research Arena 2018 which takes place in Vienna, Austria from 16th to 19th of April 2018. At this booth, RAMSSES will be one of five H2020-projects to be presented, with a poster and a video. The format will have the size of 1.7 x 0.8m, which also correlates to the measures of a roll-up poster. This allows the reuse of the design data for the print not only of conventional posters but also the print of roll-ups. In case a flyer will be needed at a certain time during the project, it is a cost-saving opportunity to redesign the existing file data for the print of additional flyers.

4.5 Construction of a Sustainable Network (CMT)

4.5.1 E-LASS

As agreed in an early stage of the project, RAMSSES will establish a sustainable network that will maintain a platform for information exchange and cooperation after the end of the project. E-LASS, the network for lightweight applications at sea, is the strategic partner for achieving this goal. E-LASS is a joint initiative by the RAMSSES partners RISE and CMT as an outcome of the two projects LASS (Swedish national funding) and DE-Light Transport (EU-FP5). Today, the network comprises ca. 310 member organisations, all being experts with a focus on lightweight applications in the maritime area.

Together with RAMSSES, E-LASS organises workshops on a semiannually basis, including technical visits of relevant industry sites. As RAMSSES and E-LASS share the same aims, it was decided, that RAMSSES and the E-LASS network will join forces by organising the E-LASS workshops together. To create synergies and to save resources, E-LASS workshops will be combined with RAMSSES General Assemblies. The first workshop organised in that way took place in Pula on October 11th, 2017 (pictures: Figure 3, Figure 4; conference agenda: Table 7).



Figure 3: Tommy Hertzberg, coordinator of the E-LASS network, opens the workshop in Pula



Figure 4: E-LASS members inspecting Composite car decks during the industry tour at Uljanik shipyard, Pula

Table 7: Agenda of the RAMSSES/E-LASS conference in Pula

		E-Lass Conference		
11.10.2017, Hotel Histria, Pula				
Lightweight Applications				
08:15	08:30	Welcome to Uljanik	Aleksandar Kajtez	Uljanik
08:30	09:10	Uljanik composite RoRo-deck project	Vito Radolovic, Michael Rahm	Uljanik / RISE
09:10	10:00	Composite Tween Deck for Bulk Carrier – Testing of a Full-scale Prototype	Philippe Noury, Ragnar Hansen, Lars Espen Holm	DNVGL/ HEAC/ CompOcean
10:00	10:20	FAUSST - novel solutions for composite-steel joints	Rafael Luterbacher	Center of Maritime Technologies e.V.
10:20	10:45	Coffee break		
10:45	11:05	Lightweight structures	Lars Molter	Center of Maritime Technologies e.V.
11:05	11:25	Composite hatches and doors	Arnold Vaandrager	Vabocomposites
11:25	11:45	PET-based core material	Stefan Reuterlöv	Armacell
11:45	12:05	Basalt fibres for composites	Wouter Verbouwe	Basaltex NV
12:05	13:00	Lunch		
Innovation Actions				
13:00	13:30	The RAMSSES project	Carlo Cau, Matthias Krause	Cetena, Center of Maritime Technologies e.V.
13:30	14:00	Project cooperation opportunities in RAMSSES	Frank Roland	Center of Maritime Technologies e.V.
14:00	14:30	GasVessel - technologies and its application in the maritime and civil sector	Pierluigi Busetto	Navalprogetti
14:30	15:00	Coffee break		
Rules and Regulations				
15:00	15:20	New materials attached to offshore practice	Agnes-M. Horn, Ramin Moslemian, Philippe Noury	DNVGL
15:20	15:40	IMO FRP regulation status	Franz Evegren	RISE
15:40	16:00	Modernising composite materials regulations	Simon Quinn	University of Southampton
16:00	17:00	Discussion: approaches to improve innovation capabilities	Arnold de Buijn (moderator)	Netherlands Maritime Technology Foundation
sponsored by:   				

4.5.2 Others (LinkedIn...)

In order to raise additional awareness for the RAMSSES project, a profile on the social network platform LinkedIn was created. With the support of some selected RAMSSES partners, steady posts on project developments lead to a growing community that follows the RAMSSES project.

4.6 Project video

In the RAMSSES project a short film will explain the motivation for and developments achieved in RAMSSES. The project video will have a length of approx. 3-4 minutes. Besides that, there will also be a video on each of the thirteen demo cases with a length of approx. 2 minutes per video. As far as possible, the videos will be produced at an early stage of the project, so they can be used during the time of the project in various dissemination activities.

The WP05 budget (personnel and other costs) allocated to production of videos will be used to cover efforts for postproduction costs whereas the DC leaders, especially large companies, will cover the costs for the production at site (CMG decision, approved by SG). Where required and if budget permits, WP05 resources will also be used to support the video production activities at site of smaller companies (BaltiCo, MEC, PodComp, Baltic Workboats).

The first demo case video was filmed at Uljanik Shipyard in Pula and 3. Maj Shipyard in Rijeka during the second General Assembly and the E-LASS industry tour (see 4.5.1). It can be found at the RAMSSES website and will be presented on the Waterborne stand at the upcoming TRA2018 conference in Vienna in April 2018.

4.7 Cooperation with projects

In order to improve the quality of the research, besides the already formed TTG and MAG, the RAMSSES consortium is also interested to collect information from other projects (ongoing and previous) to enhance the RAMSSES knowledge repository and create cooperation with other consortia. The objective for this action is to collect the test results, design solution, and lesson learnt from other projects by getting the permission to access their public summaries or confidential report which might be helpful for research in RAMSSES.

The other objective of this action is to exchange ideas and results of the RAMSSES project with other project consortia and to look for synergies and fields for collaboration. From the subchapters below, some short descriptions about the identified projects can be derived that might be very beneficial for RAMSSES to exchange project information. The consortia of each project have been contacted and they agreed to exchange information with RAMSSES.

4.7.1 FibreShip

4.7.1.1 Basic information

- Current status: ongoing
- Funding: EU H2020 MG-2.2.2016 (funded under the same call topic as RAMSSES)
- Area: Ship hull entirely made of FRP

4.7.1.2 Abstract

“The main objective of the FIBRESHIP project is to enable the building of the complete hull and superstructure of large length sea going and inland ships in FRP materials by overcoming the above-mentioned challenges. In order to achieve this objective, the project will develop, qualify and audit innovative FRP materials for marine applications, elaborate new design and production guidelines and procedures, generate efficient production and inspection methodologies, and develop new validated software analysis tools. Clear performance indicators will be designed and applied in the evaluation of the different solutions developed for three targeted vessels categories (Light commercial Vessels, Passengers transportation & leisure Vessel, Special Services Vessel). Finally, the different technologies generated in FIBRESHIP will be first validated and then demonstrated by using advanced simulation techniques and experimental testing on real-scale structures.” [1]

4.7.1.3 State of collaboration

- Mutual participation in the projects’ kick-off events, exchange of information and ideas
- Deeper collaboration with FibreShip is sought especially by RAMSSES WP17 (*Demo Case Custom made hull for offshore vessel*) and WP06 *Rules and Regulations, Exploitation*.

4.7.2 GasVessel

4.7.2.1 Basic information

- Current status: ongoing
- Funding: EU H2020 MG
- Area: Compressed Natural Gas Transport System (here, vessel means tank, not ship)

4.7.2.2 Abstract

“The GASVESSEL aims to prove the techno-economic feasibility of a new CNG transport concept enabled by a novel patented Pressure Vessel manufacturing technology and a new conceptual ship design including safe on- and offloading solution. It carries out research and innovates different steps in the value chain from a decision support model to simulate and benchmark scenarios until the process of ship design, new Pressure Vessel designs and manufacturing as well as novel high pressure on- and offloading. The project will make it possible to supply natural gas to places where natural gas is not yet

a part of the energy supply e.g. where large investment in regassifiers are not feasible or done (yet) such as the Mediterranean Islands.

The concept offers novel cost-effective gas transportation and hence promising prospects to start using and monetizing the huge amount of currently wasted (flared), stranded and associated gas which is currently wasted or not used, while contributing to reducing an important environmental side effect of global oil exploitation. The validation and proof of concept of the GASVESSEL project is performed by a cost-benefit analyses (financial viability), safety assessment, environmental impact analyses and value chain business cases development in relation to real-life geo-logistic scenarios.” [2]

4.7.2.3 State of collaboration

- The Coordinator of GASVESSEL gave a detailed overview presentation at the E-LASS event in Pula
- RAMSSES and GASVESSEL have various requirements and interests in common. Exchange will be continued, further collaboration is sought.

4.7.3 ADAM4EVE (finished project)

4.7.3.1 Basic information

- Current status: finished
- Funding: EU FP7
- Area: Adaptive and smart materials and structures for more efficient vessels

4.7.3.2 Abstract

“ADAM4EVE – is an EU FP7 project that focuses on the development and assessment of applications of adaptive and smart materials and structures in the shipbuilding industry.

Materials and structures are called adaptive if they can change certain properties in a predictable manner due to the forces acting on them (passive) or by means of built in actuators (active). Those materials and structures are referred to as smart if they provide best performance when operation circumstances change.

The main idea of ADAM4EVE is to explore the potentials of adaptive materials and structures in ships and pave the way for industrial application. This will allow ships to react more flexible to changing operational and environmental conditions and thus to operate more efficiently and environmentally friendly, while at least maintaining the safety level. Moreover, the use of smart and intelligent materials will allow offering new functionalities, making ships more attractive to operators and passengers.” [3]

4.7.3.3 State of collaboration

The ADAM4EVE consortium has been requested for approval to share project results with RAMSSES knowledge base. The partners who have answered so far (the period for answering is still ongoing) do not object, and they support the idea of collecting project results in a common knowledge base.

4.7.4 QUALIFY

4.7.4.1 Basic information

- Current status: ongoing
- Funding: EU Interreg
- Area: Ship hull entirely made of FRP

4.7.4.2 Abstract

“The Interreg project Qualify aims to remove the technological and regulatory barriers that currently prevent the widespread application of hybrid structures (metal/composite) in the industry. It will deliver

the knowledge and the guidelines that the industry needs to pursue certification of adhesively bonded hybrid joints for primary structures in marine applications.

The approach proposed requires a combination of capabilities and experiences not available within the national borders of individual participants. The innovative approach is the combination of state-of-the-art knowledge with the experience of the classification societies and that of end-users: physically-based models, developed in previous and parallel projects that describe the adhesive bond performance, will be further expanded to include the relation to environmental conditions; they will be extensively tested and validated, giving reliable prediction of performance in real operating conditions. To shorten the testing time, unique accelerated test methodologies and equipment will be developed, to reflect the lifetime of the bonded structure with one month of testing. For the first time in the industry, an inspection and monitoring protocol will be developed, using advanced sensing technologies, as well as an innovative in-situ repair technology. These innovative advances will enable certification of composite superstructures using steel/composite adhesive bonds for their use in primary structures in marine applications.” [4]

4.7.4.3 State of collaboration

For QUALIFY project, Center of Maritime Technologies e.V (CMT) is responsible as a project’s observer. CMT will provide information and connecting the QUALIFY project with other projects. Hence, CMT will connect the QUALIFY and RAMSSES projects, create synergies and exchange information.

4.7.5 DE-LIGHT Transport

4.7.5.1 Basic information

- Current status: finished
- Funding: EU FP6
- Title: Developing lightweight modules for transport systems featuring efficient production and lifecycle benefits at structural and functional integrity using risk based design

4.7.5.2 Abstract

“DE-LIGHT Transport (Developing Lightweight Modules for Transport Systems Featuring Efficient Production and Lifecycle benefits at Structural and Functional Integrity using Risk Based Design). Complex lightweight modules for ships and railway will be developed using risk based design methods. The modules will contain structural and outfitting components. The modules can be efficiently pre-assembled under favourable working conditions using economy of scale. Modules can be adapted to customer needs thus featuring structural and functional integrity, improved safety and environmentally friendliness as well as efficient operation and reduced life cycle cost. The development of lightweight modules will thus contribute to increase the competitiveness of European producers and operators of transport systems. The application of risk based design methods will allow to develop highly innovative solutions exceeding the range of existing classification rules by exploring new material combinations, innovative joining, assembly and pre-outfitting techniques. The scope of applications followed by DE-LIGHT reaches from passenger and RoRo ships, through cargo and short sea ships, to inter-modal transport”. [5]

4.7.5.3 State of collaboration

The DE-LIGHT Transport consortium has been requested for approval to share project results (test reports) with the RAMSSES knowledge base. The partners have agreed.

5 Initial Exploitation Plan

Main author of the chapter: Arnold de Bruijn, NMTF

Exploitation of results is an important aspect of the RAMSSES project, since it relates directly to Objective 1 of the RAMSSES project:

“The RAMSSES Demonstrator Cases (Demos) will foster the use of new materials in real applications with high market potential”

To prove this potential each demonstrator case is required to make an exploitation plan and a business plan in which both the commercial as non-commercial use of the demonstrator cases is outlined and made measurable as far as reasonable and practicable. This enables the monitoring of results of all demonstrator cases and their combined impact.

An initial exploitation plan was included in the DoA (2.2.4) and will be used as basis for this document, it is repeated in subchapter 5.1. Then subchapter 5.2 outlines the process and timeline of monitoring the results of all demonstrator cases and the combined impact. Subchapter 5.3 provides templates for the demonstrator cases to develop their exploitation and business plan. It is expected that in future updates of this deliverable subchapters are added with guidance on the monitoring of exploitation.

This document (D06.1) will be stepwise developed and updated during the project, starting with this first document, then updated in PM36 (D06.4) and the final version at the end of the project (D06.6).

Part of the contents of this report and its updates might also be used to contribute to the development of new rules and standards, therefore we will include references to other deliverables covering this subject (D06.2)

5.1 Initial Exploitation plan from proposal phase

Exploitation/Business Plans to exploit project results and achieve the impact described in this chapter are:

- The Exploitation Plan is meant for the usage and exploitation of project results by the partners who have access to these results. Results listed in the exploitation plan can be tangible outputs, e.g. prototypes, drawings or intangible outputs e.g. know-how, data or solution catalogues. Those results can be used for commercial purposes, but also as training material, for future research etc. The Exploitation Plan includes:
 - a list of project results for each Work Package and from the entire project;
 - a description of those results, including the possibilities to use and IPR rights related to them;
 - a description of the exploitation plans for each partner.
- A Business Plan refers to the commercial use of results. It is therefore covering a sub-group of results presented in the Exploitation Plan and their use primarily by industry partners. The Business Plan is meant to ensure market uptake and contains business goals and the assessment of their achievability (e.g. supported by a SWOT analysis, market analysis, customer review), and a plan on how the business goals shall be reached.

Both Plans will be stepwise developed during the project

5.1.1 Commercial use of results

The RAMSSES partners will use the project results according to their specific fields of activity:

Commercial Use of Results

- Shipyards and ship equipment suppliers will use the results to improve their products, hereby strengthening their market position, explore new market segments and gain new customers;
- Engineering service providers, classification societies and research centres will improve their services and adapt them to the latest technological developments, hereby ensuring market leadership in advanced technologies and engineering methods
- Knowledge and data generated in RAMSSES will also be used in the discussion with banks and insurance companies to improve the financing conditions for innovative technologies.

5.1.2 Non-commercial use of results

Non-Commercial Use of Results will be implemented as following:

- All those groups jointly will use the results and knowledge gained from the RAMSSES project to contribute to the development of new rules, regulations and legislation and to provide feedback to policy making;
- Associations and research centres will use the knowledge and results to improve services towards their members to develop the European RDI network and to inform them on latest technical developments;
- All partners will use results for further developments, the definition of future research needs and use the knowledge to increase their competences in research, development and innovation;
- Academic partners, associations, research centres and industry will use the knowledge gained through the project to develop training material both for graduate and post-graduate academic and vocational training.

Table 8 presents draft intentions of selected partners for non-commercial exploitation of RAMSSES results.

Table 8: Plans for non-commercial exploitation

Partner	Exploitation Plan
Academia / Research Institutes	
CMT	Will use the results to improve their services to the European and German shipbuilding industry in developing and coordinating complex projects in the area of maritime materials and constructions.
SICOMP	Will improve their advisory services and testing capabilities for companies in the area of determining properties of complex composite materials
RISE	Will apply the extended knowledge on testing of fire properties of composite materials for improving their services and testing capabilities
FHG	Will improve their knowledge on mechanical testing of small scale composite structures in order to better advice and support the maritime industry

TNO	Will be able to provide better advice to designers of large scale composite structures and will utilise the experience gained in mechanical testing of these structures for services to yards and engineering companies
ENSTA	Will utilise the experience gained in testing of complex 3D component to increase their competences in research and education, and will offer their improved testing capabilities to industry
ECN	Will expand their knowledge of additive manufacturing of complex 3D structures to improve their scientific and technical skills and competences for future research and services.
AALTO	Will improve their capability to provide scientific advice on application of high tensile steel in cruise ship structures
NTUA	Will use the knowledge on High Tensile Steel gained in the project to increase the competences in research and education, to increase their scientific reputation by publications in scientific journals and conferences
NMTF	Will utilise the strategy and long term plan for evolving the maritime regulatory regime in their advisory role to the national flag state, and will initiate and support innovation projects for the Netherlands maritime sector in the area of new materials
AIMEN	Will apply the gained knowledge on properties of High Tensile Steel to improve their advisory and testing services to the industry
Classification Societies	
BV	Expects to increase knowledge and competence to support shipyards and ship-operators in selecting technologies for application of lightweight materials that better address reduction of ships weight and production costs and meet stringent IMO and SOLAS regulations

While commercial exploitation potentials have been described above, the following tables describe the expected business potentials from the perspective of the consortium and in view of an external market uptake. The overview presented is the result of interviews with consortium key partners. It contains indicative figures that partners were able to provide at this stage. They will be complemented by a comprehensive market study supported by marketing experts of key industry players as well as by exploitation plans by all RAMSSES partners during the project.

Expected business potentials and market uptake by RAMSSES partners

The partners of RAMSSES will be the first to apply the innovative solutions demonstrated in the project in their businesses. The consortium represents about 50% of Europe's total shipbuilding production value. The strength of project with regard to the commercial uptake of results can be illustrated by some statements of key partners on their intended exploitation and market uptake. These statements will serve as starting point for the exploitation and business plans, which will be developed during the project by each demo in compliance with Obj.1.

D. Büchler, CEO (BALTICO-WP09): *"we are an innovative SME and expect to achieve a flexible industrial serial production of composite components within RAMSSES. The modular approach will allow up to 25% cost savings in the production, making custom-made lightweight solutions "affordable". This will both improve the competitiveness of BALTICO and expand the market for advanced material solutions in maritime and other sectors in which we are active. The modular*

system including dedicated joining elements will allow to use mechanical joining (screws and bolts) to connect the elements on board, thus avoiding both welding and bonding to a large extent.”

P. Lundmark, CEO (PODCOMP-WP10): “PODCOMP aims to deliver 7.000m² in the first year after the project with a turnover of 1.4 Mill. €. This would be an additional product for our production line and would require an additional workforce of 3 employees. It is expected that the maritime market will request in the medium term 70.000m² per year. The wall system which will be developed in RAMSSES can be applied in cabins with a production volume of more than 60.000m² per cruise liner. We are prepared to produce about 30.000 m² per year, expecting the market for this product to triple within the next 5 years.”

M. Morel, R&D manager (NAVAL GROUP-WP11): “The ship propeller market is projected to grow \$6 Billion by 2020 at a CAGR of 10 % according to a recent study of MarketandMarket US firm which is the No 2 world sources in terms of annually published premium market research reports. In this competitive market, 3D additive process in producing serial blades in innovative material, will provide differentiation to propeller manufacturers for important market take up.”

J. Mehdau, Head of R&D (BMS-WP12): “RAMSSES allows to continue innovate and show the feasibility of larger composite rudder components. This provides the option to reduce costs in our value and supply chain. Using composites more complex geometries can be manufactured, leading to load and hydro dynamical optimised rudder flaps. In addition, the using composites will make it possible to reduce weight, material consumption, maintenance costs, installation efforts, transport costs and lead times. The expected results will enable European equipment manufacturer to keep up competitiveness especially for the shipbuilding market in Asia.”

H. Josef Mammes, Head of Research (MW-WP13): “We intend to use RAMSSES results in coming cruise ship orders, in particular the 11 ships we have in our order book for the next five years. Interior walls system and modular lightweight superstructure are excellent applications for new material solutions. Discussions with our customers, Norwegian Cruise Lines, Carnival Cruise Lines and others to present the ideas of RAMSSES showed a positive attitude and high expectations. A key challenge for us is to reduce the cost of innovative material solutions and to integrate it into our highly mechanised process chain. We see the modular lightweight system as an important means to solve this challenge.”

V. Buic, Head of ship design (ULJ-WP14): “The ongoing production of Car Carriers with lightweight solution implemented, totally 60.000m² of composite structure on five vessels, showed a positive impact on the yard process as well as vessel performance. The full order book up to year 2018 and positive feedback from shipowners regarding innovative solutions gives the possibility for development and implementation of RAMSSES lightweight solution for different types of vessels.”

Imre Kuusk, project engineer (BWB – WP15) “Baltic Workboats produces 15-20 workboats or ferries each year. With novel approach to deckhouse structures based on Aluminium sandwich panels, the shipyard could use 50-75 tons of aluminum panels per year resulting in considerable saving in insulation time and usable onboard space”

M. Morel, R&D manager (NAVAL GROUP-WP16): “NAVAL GROUP group delivers worldwide high value ships. Step by step, the preoccupation with optimisation of superstructure has led to work on incorporating new functions into composites by choosing the components no longer on the sole criterion of their mechanical performance and weight, but also on the basis of multi-functionality. Furthermore, use has been made of the ability of composites to incorporate into their structure foreign components (e.g. fine metal grids, sensors, antennas, etc.) providing a new function while minimising the impact on the mechanical performance.”

L. Morel, Composite Specialist (DSNS-WP17): <i>“The Damen Group delivers 150-200 ships per year. The potential market expectation for composite materials in ships is enormous, exceeding 1 billion euro. Damen already has a composite shipyard with 120 employees, and business plans are already developed to expand the composite production capacity by more than 100 employees.”</i>
L Rouxel-Duval, R&D Ship Manager (STX Fr – WP18): <i>“The novel passenger cabin and associated superstructure solution to be developed within RAMSSES offers great saving potentials in terms of weight, ship CAPEX and OPEX due to associated energy saving and improved compactness. Such saving potentials correspond well to our customer expectations. If RAMSSES Project confirms such potential, this break-through solution may represent one key-element of the next cruise ship generation in 10 years’ time, keeping and reinforcing Europe leadership in the cruise vessel market.”</i>
FINCANTIERI and CETENA (FC&CET-WP19): <i>“A cruise vessel structure contains ca. 30.000 tons of steel. Considering a market of 10 to 15 Cruise vessel per year built in Europe in the next decade, and adoption of HSLA (high strength low alloy steel) up to 20 -25% of total structural weight, more than 70.000 tons of HSLA could be used in European shipyards in the next years.”</i>
A. Niemelä, Head of Hull Basic Design (MT-WP20): <i>“High Tensile Steel (HTS) weight saving potential in a cruise ship hull structure level is about 20%. Benefits are more efficient production and material utilization, better ship stability and hydrodynamic properties, smaller ship fuel consumption, more efficient ship projects... After a successful demonstration in RAMSSES, MT targets to gradually introduce HTS in the hull structures in the 7 large cruise ships currently in the order book”</i>
B. Cardama, R&D Department (CARDA-WP21): <i>“Steel and composite repairs will open new services offered by Cardama Shipyard to its customers, and an increased 10% of repairing orders are expected as long as these innovative materials are being introduced more and more in the next 5 years. This will help the effort of the Shipyard to convince new-building customers to introduce composites into their vessels every time it is worthy to do that.”</i>

Figure 5 shows the expected schedule for the exploitation of the RAMSSES results by the different partners, starting from the prototype test and the pilot installation, which will both happen in RAMSSES, up to the market entry. This last phase is scheduled for the project follow-up phase, but will start already during the project for selected innovations. 90% of the technologies demonstrated in the project can be implemented within 2 years after finalisation of the project.

Extended market exploitation

The shipyards and technology providers are market leaders in their segments, but do not cover the full production capability of European shipbuilding companies. In Table 9, the extended market potential of all European shipbuilding companies has been estimated, including their production capability outside Europe. The statistics are based on the Sea Europe Market studies.

Table 9 Potential weight saving per year and CO2 reduction perc. of the extended market for all European shipyards

	Light Ship weight [t]	Weight Savings [t]	Estimated new-builds/year	Weight Saving Fleet (max) [t]	Realistic weight saving potential [t]
Cruise large	80.000	4%	6	19.200	8.000
Cruise medium	50.000	4%	6	12.000	7.000

Deliverable D06.1

Cruise small	35.000	4%	5	7.000	3.150
Small Craft	150	5%	250	1.875	806
Offshore vessels	500	5%	110	2.750	1.188
Car carriers	15.000	5%	10	7.500	4.688
Total				50.325	24.831

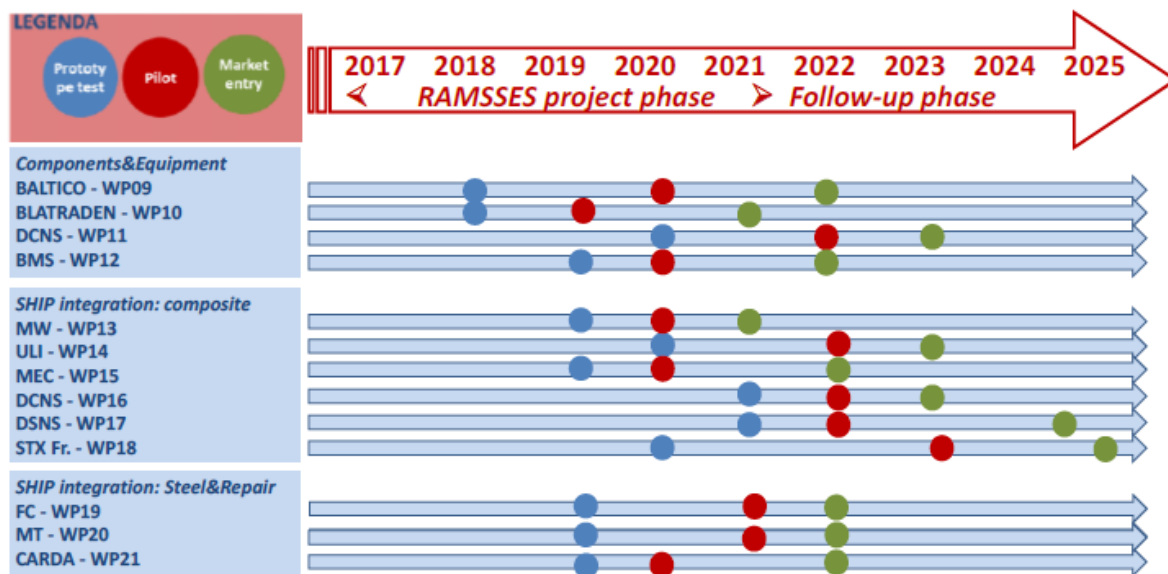


Figure 5 Overview of exploitation phases 1

The realistic weight savings potential is estimated based on an "implementation" percentage that differs per ship type. The weight saving will lead to CO₂ reduction by decreasing the energy consumption per passenger or per ton transported goods, partly due to a smaller ship displacement. E.g. for the 6 estimated newbuilds of medium cruise ships the CO₂ saving potential as assumed in ch. 2.1.2 of the project proposal would sum up to a maximum of 30.000t per year, with a more conservative assumption of 20.000t per year. The number of new build cruise ships will grow slightly in the next few years. The share of weight and CO₂ reduction by non-consortium companies cannot be directly influenced by the consortium, but are included in the basis for market monitoring, business plans and measures for market uptake. Technology providers within the consortium may stimulate a wider introduction of weight saving solutions. The estimate only accounts for market potentials in the ship types covered within the demonstrators (first order extrapolation). In view of possible applications within ship types not included in the table and a world market share of European ship equipment suppliers of 43% according to latest EU studies, the figures contained in this table appear to be conservative.

5.2 Process and timeline of monitoring RAMSSES impact

The initial Exploitation Plan illustrates how the RAMSSES results will be used by the individual partners as well as how the jointly within the consortium. Most of the results will be generated by the demonstrator cases, therefore it is important that they keep focus on achieving the expected results, share information on progress and enable the use of results by the consortium.

Monitoring progress and deviations in the expected results will help the demonstrators to take timely actions or modify their approach if needed, additionally it will also enable the consortium to determine the joint impact of RAMSSES demonstrators.

As follow-up on the initial Exploitation plan, a draft Exploitation Plan and Business Plan is expected from every demonstrator work package, using the templates in chapter 5.2.1 and 5.2.2. These draft plans must be returned in M11, and can be updated in M34 and M46, such that these plans can be incorporated in D6.2 (for the non-commercial use in the rule making process), D6.4 and D6.6. Most probably updated templates will be provided to guide the reporting process.

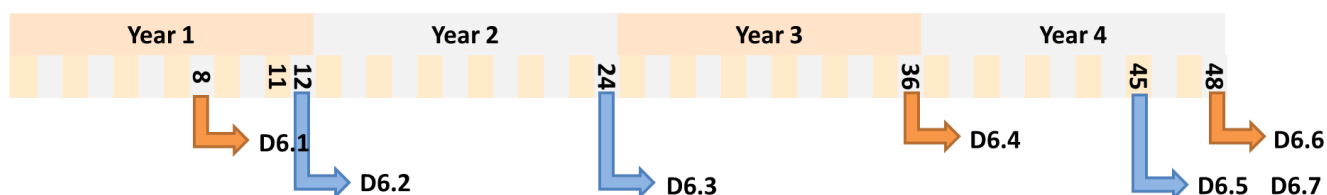


Figure 6: timeline for reporting progress on expected results

5.3 Templates for developing Exploitation plan and Business plan

5.3.1 Template for Exploitation Plan

Each demonstrator work package is required to submit a draft exploitation plan using the following document structure.

5.3.1.1 Description of demonstrator case

An general description which may be used for public presentation of the demonstrator.

5.3.1.2 Expected impact and results

A description of expected impact and a list of results supporting this impact.

- The expected impact could be an estimated weight reduction, or saving in production time or CO2 footprint.
- The results can be tangible outputs, e.g. prototypes, drawings, calculations, or intangible outputs e.g. know-how, data or solution catalogues.

Please use the initial exploitation plan from the proposal phase as a basis, but only use the items applicable to the demonstrator case. Be as specific as possible.

5.3.1.3 Potential use of results

Describe the possibilities for (non-)commercial use of these results and IPR rights related to them, also indicate which partner within the consortium is expected to use these results.

Please use the initial exploitation plan from the proposal phase as a basis, but only use the items applicable to the demonstrator case. Be as specific as possible.

Deliverable D06.1

5.3.1.4 Work plan

Provide a plan on how the expected results will be achieved, possible Interdependencies with other work packages and a simple timeline indicating important milestones for achieving these results.

5.3.2 Template for Business Plan

Each demonstrator work package is required to submit a draft business plan using the following document structure.

5.3.2.1 Description of demonstrator case

Refer to the draft exploitation plan and add how the demonstrator will offer new business opportunities.

5.3.2.2 Market review

In addition to describing the size and structure of the sector, the review should address the dynamics of the market. In particular, it should note the technologies and economics that are driving the market and the anticipated trends that could influence the market entry of the offering.

5.3.2.3 Assessment of competition

Assessment should be limited to those players offering products or services that the proposed offering seeks to supplant, either through superior technology or functionality. While the offering may be novel to the market, it will still be necessary to 'persuade potential customers that it is superior to existing offerings.

5.3.2.4 Business opportunities related to the demonstrator solution

Describe the innovation of the proposed offering in the context of the competition and the sector's needs. This subsection should include a SWOT analysis and focus on the strengths of the offering and show how those strengths play to the opportunities that the competition survey has highlighted. Indicate the weight, price and lead time improvements compared to current technology. Summarise potential business model(s).

5.3.2.5 Work plan

Provide a plan on how and when the business opportunities will be achieved. Outline, graphically, the roll-out of the offering: timescale; sales growth; market share

6 References

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7 Indexes

7.1 Index of tables

Table 1: Dissemination Plan summary – goal ‘Improving Public Perception and Societal Image’	11
Table 2: Dissemination Plan summary – goal ‘Developing a Maritime Materials Innovation Platform’	12
Table 3: Dissemination Plan summary – goal ‘Improving Competitiveness and Market Uptake’	14
Table 4: Dissemination Plan summary – goal ‘Remove external Barriers towards Application’	15
Table 5 Technology Transfer Group members	17
Table 6 Maritime Advisory Group (MAG) members	18
Table 7: Agenda of the RAMSSES/E-LASS conference in Pula	20
Table 8: Plans for non-commercial exploitation	25

7.2 Index of figures

Figure 1: External information flow (Annex I, Part B, p. 30)	10
Figure 2: The CMG (highlighted yellow) in the RAMSSES Management structure	11
Figure 3: Tommy Hertzberg, coordinator of the E-LASS network, opens the workshop in Pula	19
Figure 4: E-LASS members inspecting Composite car decks during the industry tour at Uljanik shipyard, Pula	19
Figure 5 Overview of exploitation phases 1	29
Figure 6: timeline for reporting progress on expected results	30

8 Annexes

8.1 Annex A: Public summary

Since the report at hand is a public RAMSSES Deliverable, there is no need to provide a public summary.