



## **The Energy Management In Practice (EMIP)-2 project**

### **Brief project description and update**

**MARKIS conference Nov 30-Dec 1 2011**

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# Outline

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# The WG 5 group- background & motivation

*”No harmful emissions to air and sea”*  
NSA vision

*“ The emerging environmental challenges will eventually call for radical new solutions. Few single resources will be able to make a difference in this process. But by joining forces through existing and new constellations we believe we will not only find sustainable solutions but also develop new business”*

(Tom Erik Klaveness,2011)



**SUSTAINABLE WINNERS**

Shipping companies in Norway come together in a unique collaboration to explore eco-friendly solutions for the industry - The WG5 initiative

**Practical purpose**  
In April 2011, five stakeholders in a common field - the shipping industry - met to discuss the need for a common approach to the environmental challenges of the shipping industry. The purpose was to create a common vision for the industry and to develop a common strategy for the industry.

**Background**  
The shipping industry is a key sector in the Norwegian economy. It is a sector that is highly visible and that has a significant impact on the environment. The industry is also a sector that is highly competitive and that is constantly evolving. The industry is therefore in need of a common vision and a common strategy to ensure its long-term success.

**Goals**  
The goals of the WG5 initiative are to develop a common vision for the industry and to develop a common strategy for the industry. The goals are to reduce the industry's environmental impact, to improve the industry's efficiency, and to develop new business opportunities.

**Members**  
The WG5 initiative is a collaboration between five companies: Hovor, Wilhelmsen, and three other companies. The companies are all leading companies in the shipping industry.

**Views from the top**  
The WG5 initiative is supported by the leadership of the companies. The views from the top are as follows:  
- **Andreas Solheim, CEO of Hovor:** "The WG5 initiative is a unique collaboration between five leading companies in the shipping industry. It is a collaboration that is focused on the future of the industry and on the development of new business opportunities."  
- **Elizabeth Selvig, CEO of Wilhelmsen:** "The WG5 initiative is a unique collaboration between five leading companies in the shipping industry. It is a collaboration that is focused on the future of the industry and on the development of new business opportunities."  
- **Tom Erik Klaveness, CEO of Wilhelmsen Group:** "The WG5 initiative is a unique collaboration between five leading companies in the shipping industry. It is a collaboration that is focused on the future of the industry and on the development of new business opportunities."  
- **Carl Selvan Heggen, CEO of Hovor:** "The WG5 initiative is a unique collaboration between five leading companies in the shipping industry. It is a collaboration that is focused on the future of the industry and on the development of new business opportunities."  
- **Thomas Wilhelmsen, CEO of Wilhelmsen Group:** "The WG5 initiative is a unique collaboration between five leading companies in the shipping industry. It is a collaboration that is focused on the future of the industry and on the development of new business opportunities."

## The WG 5 group- achievements

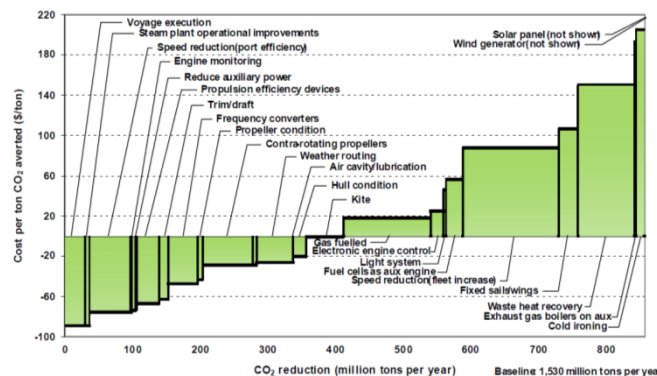
- WG 5 inaugurated February 2009
- Joint experience transfer program initiated
  - A1 Emission reduction technologies (Klaveness)
  - A2 Alternative fuels (BW Gas)
  - A3 Energy efficiency (Grieg Shipping)
  - A4 Waste generation and handling (Wilhelmsen)
  - A5 Discharge to sea (Grieg Shipping)
  - A6 Environmental training (Høegh)
  - A7 Environmental monitoring and accounting (Høegh)
- Reporting phase Aug 2009- prioritized further work in area A3
- EMIP I executed in the period Mar 2010- May 2011
- EMIP II initiated Sep 2011- Solvang ASA new member of WG 5

# EMIP I; Effectgoal- WHY did we do it?



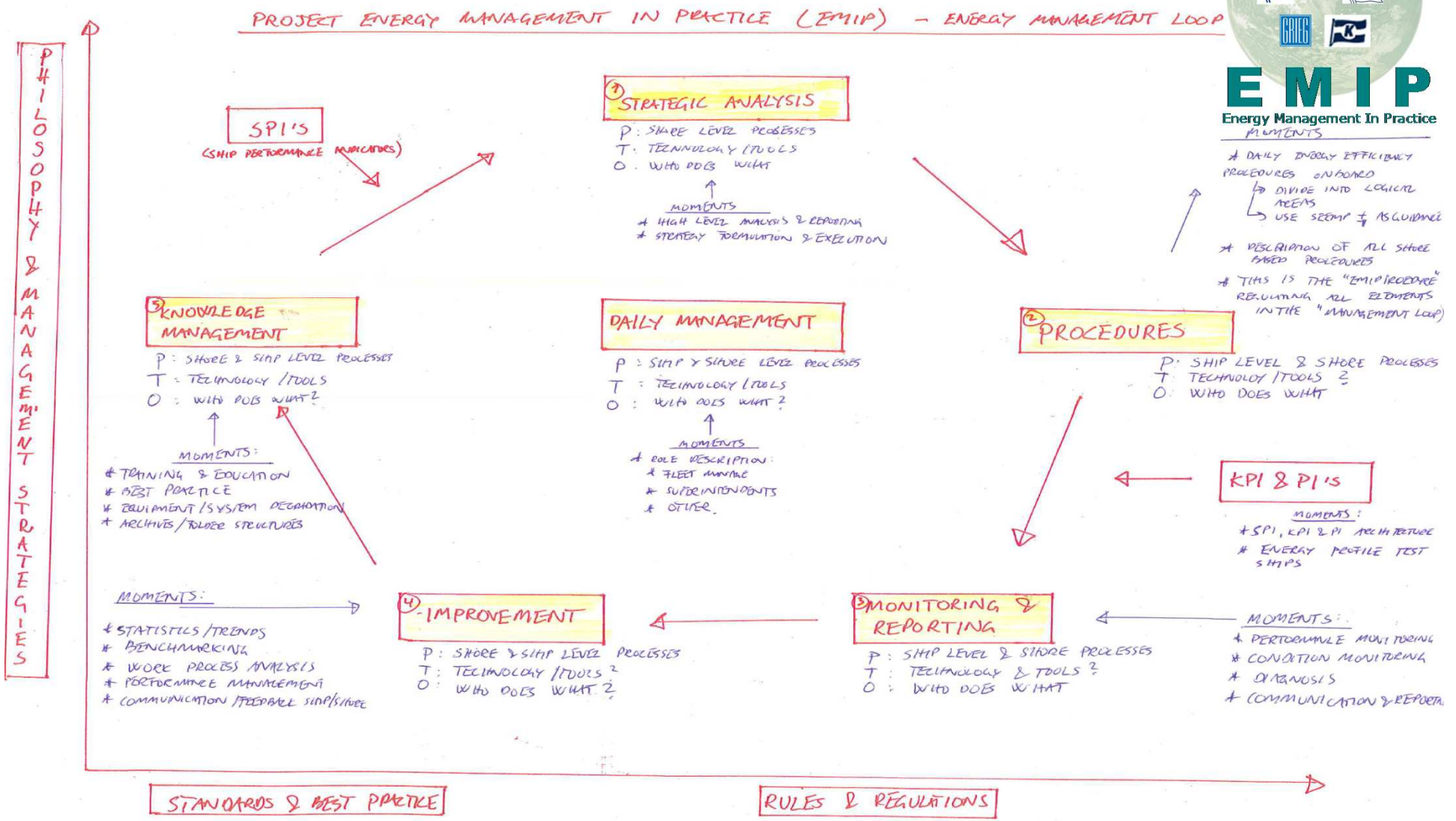
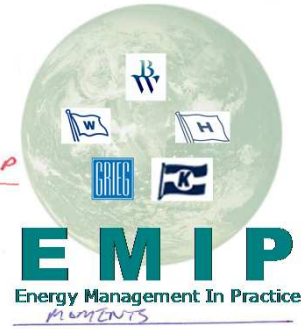
- “*establish a common platform and ability among a group of ship owning companies which enables future cooperation regarding evaluation, distribution, execution, monitoring and evaluation of energy saving measures on board ships*”.

Verify effect of energy efficiency measures in real life applications



Pathways to low carbon shipping, DNV 2009

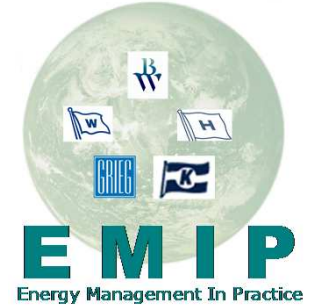
# Mental model/systems architecture-Energy Management Loop



"ref; The single elements are available. The challenge and risk lay in the feasibility and possibility to integrate the elements into a well coordinated product"

AAOL MAY 2010

## EMIP I; Resultgoals- WHAT should we deliver?



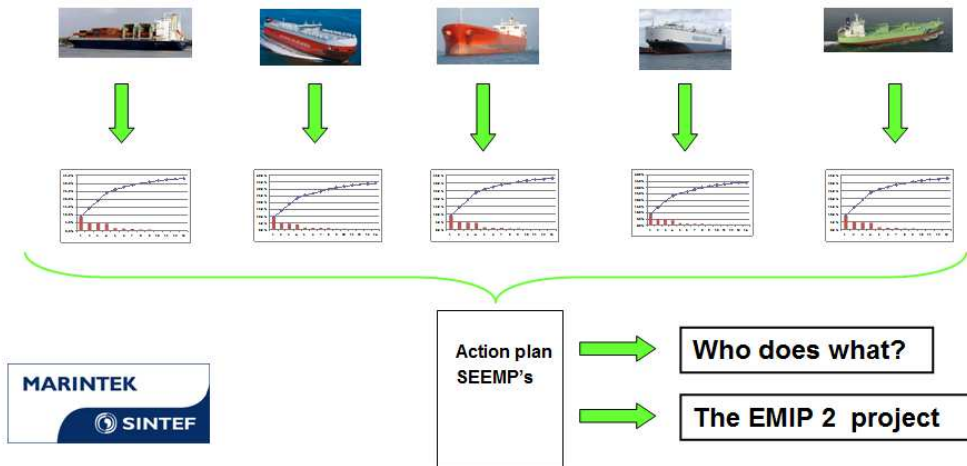
- Deliverables;
  - Evaluation, selection and installment of **sensors and data support systems** on test ships to keep track of effect of energy saving measures implemented
  - Establishment of an **Energy Management procedure** supporting process execution on board ships, development of training programs and future cooperation between the participating ship owning companies
  - Establishment of a **training program**
  - Establishment of current **energy profile** on test ships to establish baseline before implementation of measures and investigate energy saving potential for measures in question

# EMIP I; Resultgoals- WHAT should we deliver(2)?

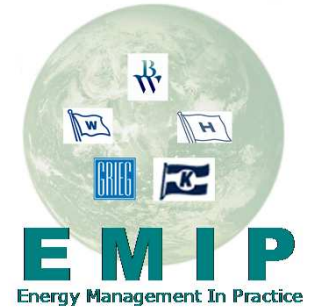


- Deliverables;
  - The project will result in a **coordinated plan** with measures showing how the shipping companies will continue their cooperation **to test energy saving measures**

ENERGY REDUCTION MEASURES	BW	TKG	HFS	WW	GS	Mean	SUM
M/E tuning/ optimisation	1.6%	2.0%	2.0%	1.5%	1.6%	1.7%	
Trim optimisation	1.0%	1.0%	1.0%	0.9%	0.9%	1.0%	
Voyage programme	2.0%	2.0%	1.9%	1.9%	1.9%	1.9%	18.6%
Application of new type of antifouling	4.8%	4.7%	4.7%	4.6%	4.6%	4.7%	
Maintaining a clean hull and propeller	9.1%	8.9%	8.9%	8.8%	8.7%	8.9%	
Frequency converters	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	
Propulsion system enhancement (propulsion duct, boss fins, interceptor)	4.7%	4.8%	3.2%	3.2%	6.0%	4.4%	
Autopilots	1.0%	1.0%	1.0%	1.0%	0.7%	0.9%	
Light systems	0.3%	0.4%	0.3%	0.3%	0.4%	0.3%	11.1%
Kite	2.4%	1.9%	2.0%	1.9%	2.3%	2.1%	
Propulsion system enhancement (ducktail)	1.5%	1.5%	1.5%	4.0%	1.5%	2.0%	
Engine modification (slide valves for slow steaming)	1.3%	1.5%	1.3%	1.3%	1.3%	1.3%	
Propulsion system enhancement (propeller and rudder integration)	1.3%	1.3%	1.5%	1.5%	1.3%	1.4%	
Electronic engine control	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	
Waste Heat Recovery	4.9%	4.9%	5.1%	5.0%	4.8%	4.9%	9.6%
Misc. alternative fuels for engines, from HFO to MDO	0.6%	0.7%	0.7%	0.7%	0.6%	0.7%	
Air lubrication	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	
SUM	39.4%	39.4%	38.3%	39.5%	39.4%	39.2%	39.2%
Implemented	0.0%	2.0%	3.0%	5.0%	6.0%		
To be Implemented	22.3%	23.7%	20.1%	21.2%	20.6%		
High risk or not cost effective	17.1%	12.8%	15.1%	13.3%	12.8%		
SUM	39.4%	38.5%	38.3%	39.5%	39.4%		



## EMIP I; Resultgoals- WHAT should we deliver(3)?



- Budget goal; **7425 kNOK**
  - 2970 kNOK Norwegian Research Council(NRC) Support
  - 4455 kNOK WG 5 contribution
- Project termination date; **May 2011**
- Final project report available at NSA website;
  - [http://www.rederi.no/nrweb/cms.nsf/\\$all/4C5EE14681384600C12578630026C](http://www.rederi.no/nrweb/cms.nsf/$all/4C5EE14681384600C12578630026C)  
[CA2](#)



## The EMIP II project- project description & update

## The project's effectgoal- WHY do we do it?



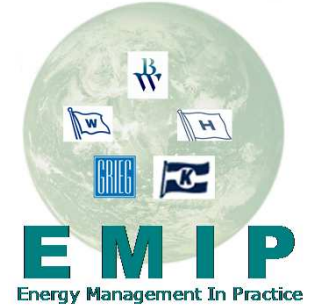
*“To utilize, strengthen, enhance and sustain the developed EMIP platform through stronger inclusion of R&D institutions and industry actors enabling a robust knowledge and innovation platform related to energy efficiency on ships, with rational utilization of limited resources and a strong focus on verification of practical energy efficiency measures, contributing to increasing Norwegian shipping's competitive edge and environmental performance”.*

## Resultgoals- WHAT shall we deliver?



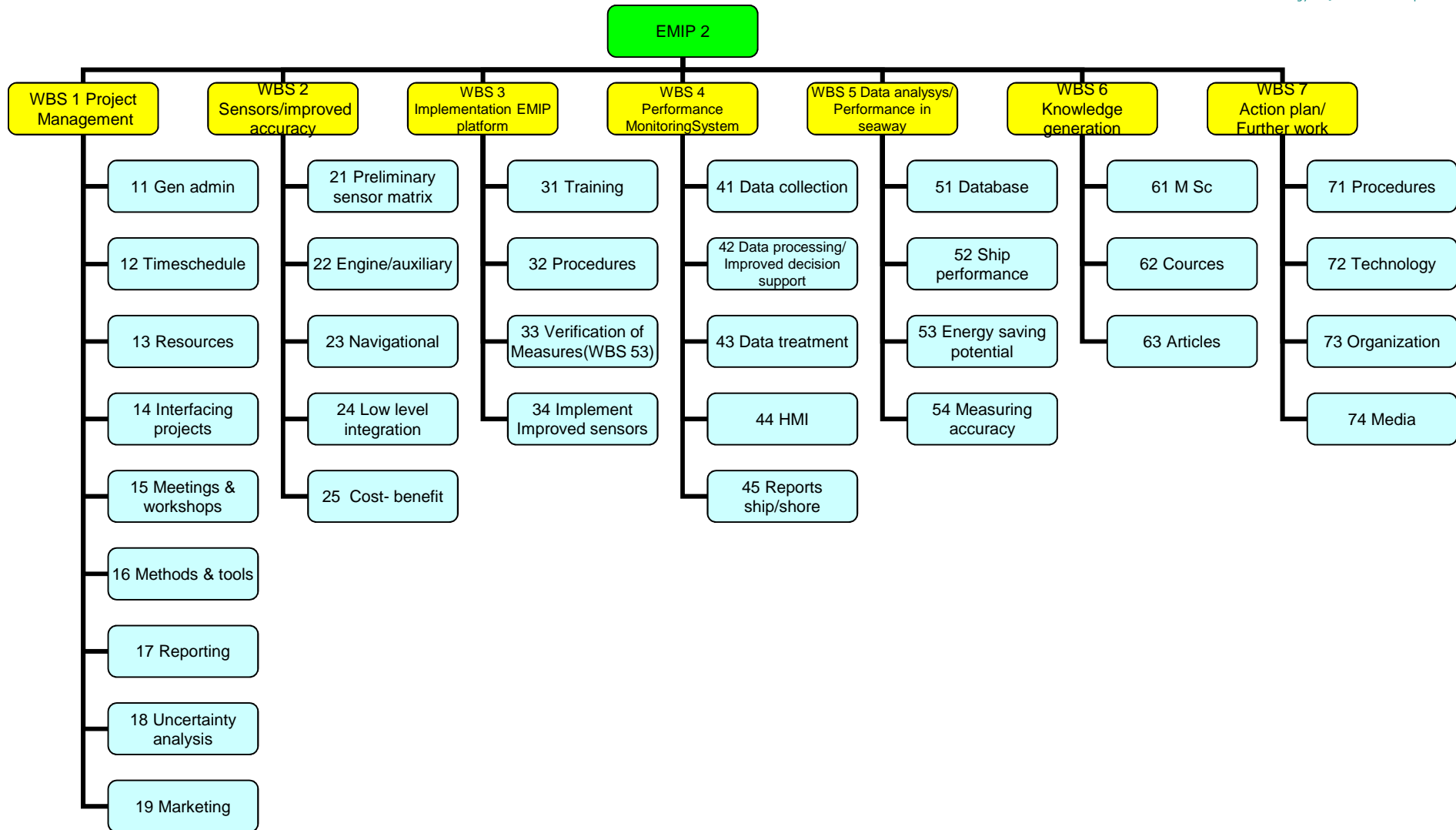
- Deliverables;
  - Identify, test, integrate and develop sensors yielding **improved measuring accuracy** related to energy efficiency on ships
  - **Implement results from the 200840/I40 EMIP I project, related to developed training programs for crews, procedures and verification of measures**
  - Enhance decision support functionality installed on nominated testships and build a **robust ship-shore reporting** system enabling improved capability for shore organization follow up
  - Establish a **database for scientific analysis** and systematic follow up of energy efficiency measures on ships and perform studies related to **improved energy efficiency of ships in seaway**
  - Further **develop knowledge** related to energy efficiency on ships by including **3 M Sc students** to the project, establish courses in the topic at **NTNU** and publish articles related to the project in scientific journals, popular science magazines and in the media in general
  - Conclude the project with an **action plan** with indication of next steps and areas for further research

## Resultgoals- WHAT shall we deliver?



- Budget goal; **10500 kNOK**
  - 4200 kNOK Norwegian Research Council(NRC) Support
  - 6300 kNOK WG 5/partner contribution
- Project termination date; **Sep 26 2013**
- **(Full project description available at;)**
  - <http://www.maritim21.no/?p=2500>

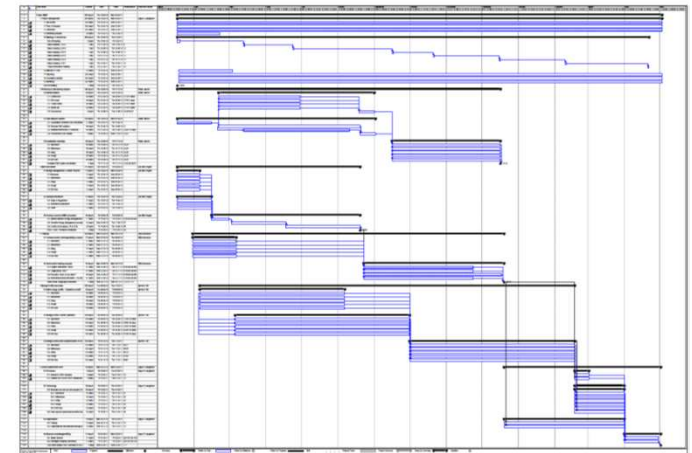
# Project structure- Work Breakdown Structure(WBS)



# Prelim timeschedule- milestones



- WBS 2 Sensors for improved measuring accuracy and decision support- concluded **Q3 2012**
- WBS 3 Implementation of EMIP platform- concluded **Q2 2013**
- WBS 4 Performance Monitoring system, concluded **Q1 2013**
- WBS 5 Data analysis/Performance in seaway, concluded **Q1 2013**
- WBS 6 Knowledge generation, concluded **Q2 2013**



# Organisation



- Project manager: Aage O Langeland- Grieg
- Ass project manager; Christoffer Bøhmer- Klaveness
- WBS 2; Sub project manager; Sam Holvik- Høegh
- WBS 3; Sub project manager; Christoffer Bøhmner- Klaveness
- WBS 4; Sub project manager; Petter Jønvik- Wilh Wilhelmsen
- WBS 5; Sub project manager; Brage Mo- MARINTEK
- WBS 6; Sub project manager; Tor Øyvind Ask-Solvang
  
- NTNU, MARINTEK, Marorka and Kongsberg are all project partners- in total 10 organisations.....
  
- A cooperation matrix are under development showing subject matter experts in the various companies

COOPERATION MATRIX PROJECT EMIP- AUG 2010

Work Package	Organization	Role	Start	End
WBS 1	EMIP	Project Manager	2010-08-01	2010-12-31
		Ass. Project Manager	2010-08-01	2010-12-31
		WBS 2 Sub PM	2010-08-01	2010-12-31
		WBS 3 Sub PM	2010-08-01	2010-12-31
WBS 2	EMIP	WBS 2 Sub PM	2010-08-01	2010-12-31
		WBS 2 Sub PM	2010-08-01	2010-12-31
		WBS 2 Sub PM	2010-08-01	2010-12-31
		WBS 2 Sub PM	2010-08-01	2010-12-31
WBS 3	EMIP	WBS 3 Sub PM	2010-08-01	2010-12-31
		WBS 3 Sub PM	2010-08-01	2010-12-31
		WBS 3 Sub PM	2010-08-01	2010-12-31
		WBS 3 Sub PM	2010-08-01	2010-12-31
WBS 4	EMIP	WBS 4 Sub PM	2010-08-01	2010-12-31
		WBS 4 Sub PM	2010-08-01	2010-12-31
		WBS 4 Sub PM	2010-08-01	2010-12-31
		WBS 4 Sub PM	2010-08-01	2010-12-31
WBS 5	EMIP	WBS 5 Sub PM	2010-08-01	2010-12-31
		WBS 5 Sub PM	2010-08-01	2010-12-31
		WBS 5 Sub PM	2010-08-01	2010-12-31
		WBS 5 Sub PM	2010-08-01	2010-12-31
WBS 6	EMIP	WBS 6 Sub PM	2010-08-01	2010-12-31
		WBS 6 Sub PM	2010-08-01	2010-12-31
		WBS 6 Sub PM	2010-08-01	2010-12-31
		WBS 6 Sub PM	2010-08-01	2010-12-31

# Interface Maritime 21



- By execution of EMIP I and II, WG 5 supports the execution of the Maritime 21 strategy
  - “Effektiv og miljøvennlig energiutnyttelse”

IVAR



# Communication strategy



- Under development
- Encompass;
  - Development of website
  - Regular status report in relevant forums
  - Presentations at conferences/seminars
  - Etc
- The philosophy is to be open and share results and findings
  - NSA vision
  - Maritim 21 strategy
  - Contribute in creating school for “best practice” energy management
  - Mobilize other ship owners to participate in “*one determined common coordinated movement*”

# EMIP II Current status



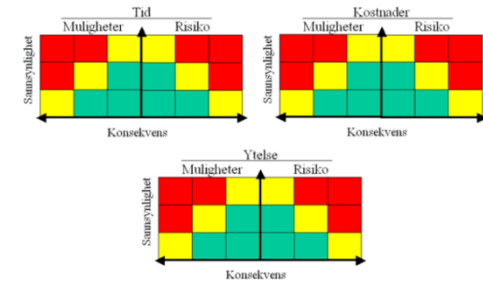
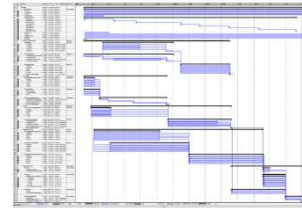
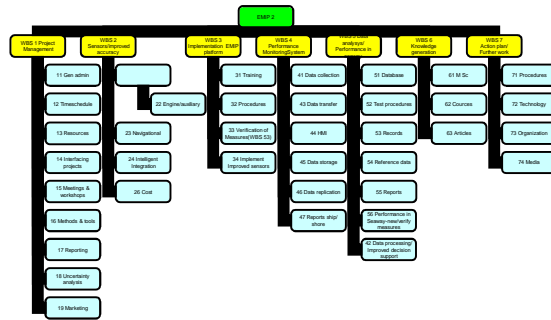
- Kick off Sep 26-27
- Detailing and harmonizing of scope of work and plans
- Company internal mobilization
- Establishing robust platform for efficient collaboration
- Harmonized plan due Dec 15
- Production....



all in the  
same boat

# Way ahead

1 Start



2 Dicipline and teamwork



3 Stop





**Working group on  
environmental friendly shipping**



*"Coming together is a  
beginning, staying together  
is progress, and working  
together is success."*

*-Henry Ford-*