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Deliverable 7.3

## DISSEMINATION REPORT

### ABSTRACT

Deliverable 7.3 describes the EcoDock dissemination activities; User Group, Marine coating portal, publications and presentations at workshops



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Environmentally friendly coatings for ship building and ships in operation

*Project Start Date:*           **1 February 2004**

*Project End Date:*           **30 April 2007**

**(Duration of the project: 39 months)**

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1	15.01.2007	First version	Sylvia Ullmer	All
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## 1 Introduction

This document describes the dissemination activities undertaken in EcoDock

## 2 Objective

The overall objective of the work package WP7 is to ensure dissemination and exploitation of the research results and to stimulate the information exchange between parties involved in the marine coating process. In close co-operation with the exploitation team and according to the definition and monitoring of the exploitation policy of the project, the work within WP 7 will also satisfy the commercial concerns of the partners.

The overall objectives will be achieved by:

- The establishment of a marine coating management interest group including all affected parties, ship owners, yards, classification societies, paint companies and equipment suppliers. The group will meet with the team at regular intervals to provide feedback and will also be invited to take part in certain activities (such as the shipyard audit) especially the development of testing methods and workshops.
- The communication of this group will be supported through the development of a European Marine Coating Management Portal providing access to coating related information and activities.
- Periodic workshops will be organised in order to involve and consult external experts from the beginning of the project. They will address all aspects of the project work (advanced paint systems, application technologies, assessment of performance, health and safety and environmental impact).

## 3 Establishment of Marine Coating Interest Group

The establishment of the marine coating management interest group (user group) already started in the proposal preparation phase. This preliminary group will be extended and the close co-operation and interaction of the project with the interest group will be organised.

The role of the interest group is:

- providing additional knowledge to the project (e.g. requirements for marine paints)
- providing feedback
- being a discussion partner in the project
- providing products for testing (paint companies), and also
- ensuring the widespread dissemination of the project results
- contributing to the broader take-up of the results by the marine industry, they will also
- be involved in assessing of product attribute requirements.

Providing products for testing was of course of special interest for the User Group members as they received independent testing of their products.

The **EcoDock User Group** brought together the following companies:

- AMERON BV, Netherlands, Marine coating producer
- ARKEMA GmbH, Germany, Additives and polymer producer
- HEMPEL A/S, Denmark, Marine coating producer
- JOTUN A/S, Norway, Marine coating producer

- MÜHLHAN GmbH, Germany, Marine coating applicator
- SIGMA Coatings Uithorn, Netherlands, Marine coating producer
- AKZO NEBEL, United Kingdom, Marine coating producer

The establishment of the so called niche group took place in the second year, when additional investigations into hard under water coatings started, to share specifically this knowledge with interested parties outside EcoDock.

The members of the **niche group** were:

- HSF Hansa Schiffsfarben GmbH, Germany, Marine coating producer
- BRUNEL Ltd., United Kingdom, Marine coating producer
- ECOSEA, United Kingdom, Anti fouling producer
- INNOCEAN Ltd., United Kingdom,
- LUMINORE Inc., Spray composite metals producer
- SUBSEA

In total **7 User Group Meetings and 1 niche group meeting** were organised by the project. These user group meetings had the character of assembly meetings where results of the workgroups were summarised and interpreted and future activities discussed:

- Inauguration Workshop, Bremen
- 1st User Group Workshop, Hamburg
- 2nd User Group Workshop, Newcastle
- 3rd User Group Workshop, Odense
- 4th User Group Workshop, Papenburg
- Niche Group Meeting, Hamburg
- 5th User Group Workshop, Pardobice
- Final User Group Workshop, Bremen

The interaction of the project with the interest group organised by establishing 7 working groups , which were chaired by the EcoDock WP leaders. Each user group member assigned internal experts to these working groups. In these groups the EcoDock topics were discussed in detail. This work/communication was supported by the Marine Coating Portal. Especially the exchange of documents was organised at the Marine Coating Portal, were dedicated user access rights were assigned to each project partner and each User Group member

7 Fora are implemented on the Marine Coating Portal to support information exchange within working groups.

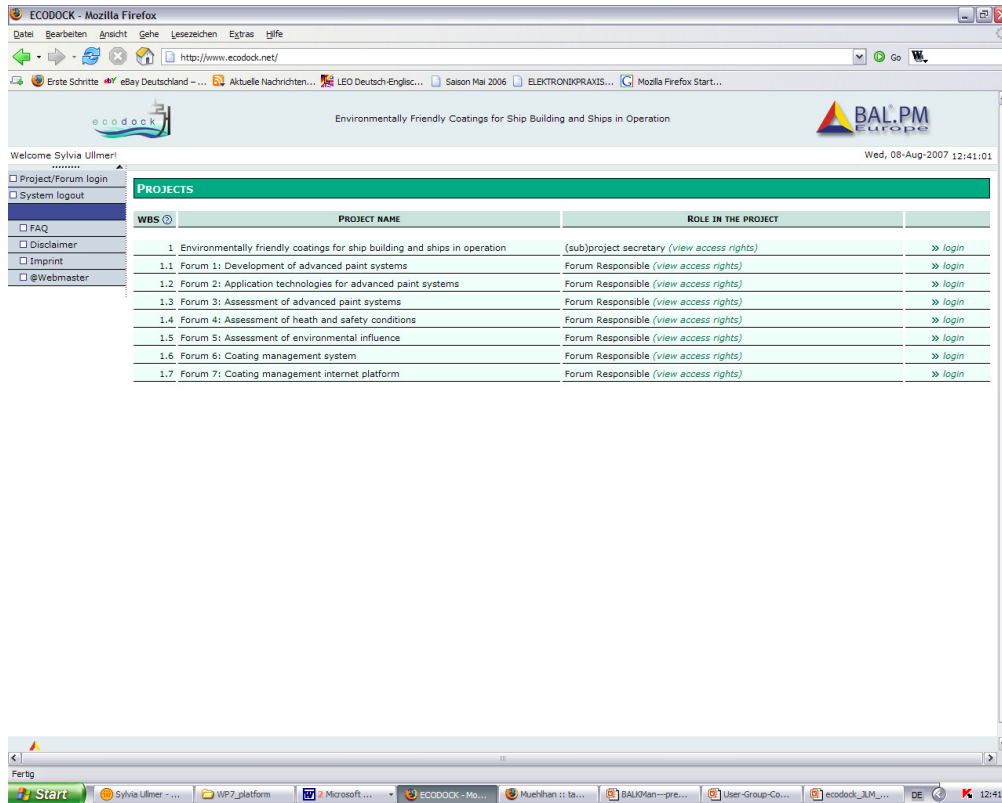


Figure 1: 7 Fora implemented on Marine Coating Portal

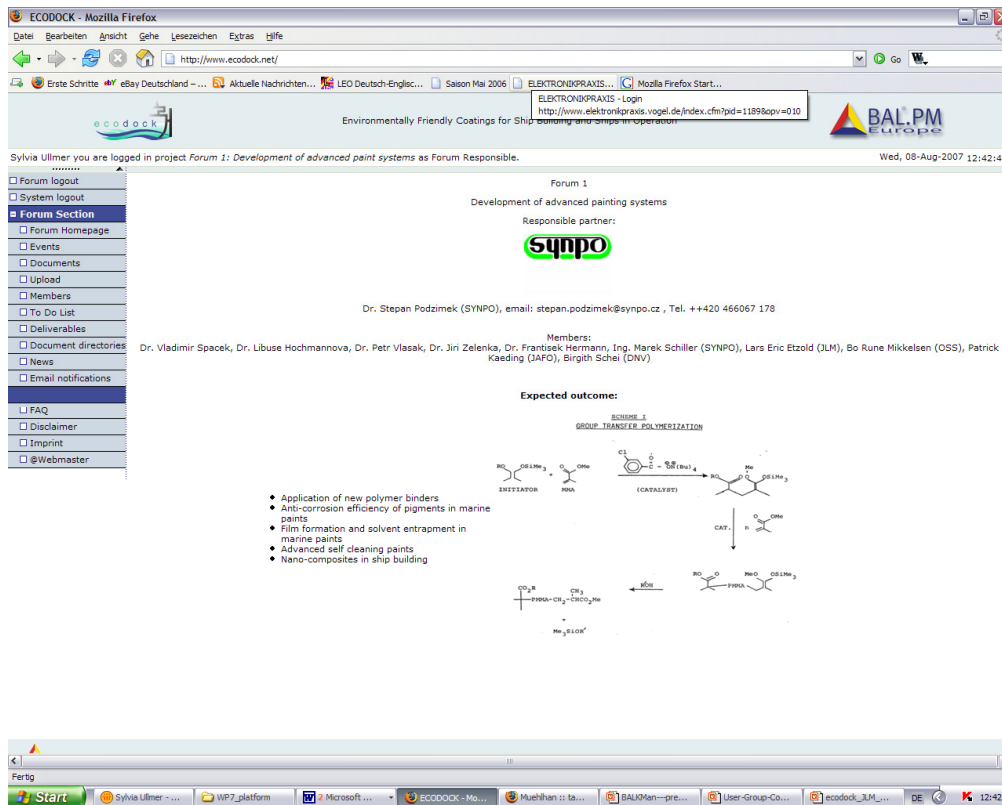


Figure 2: Start page of Forum 1 “Development of Advanced Paining Systems”

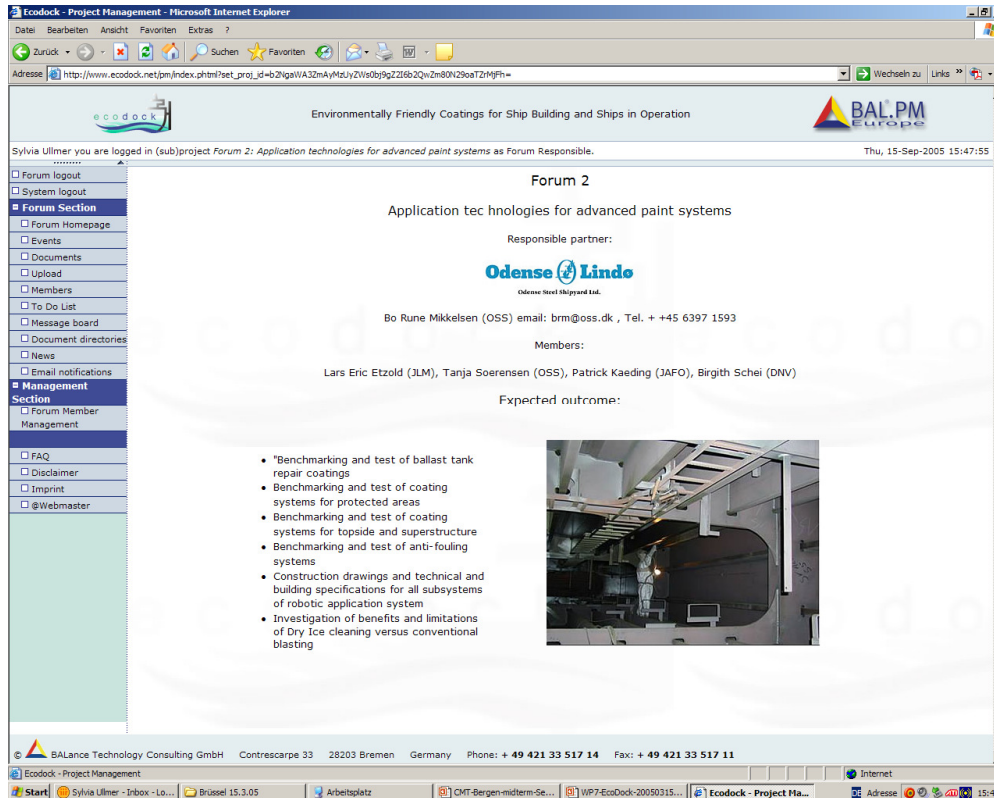


Figure 3: Start page forum 2 “Application Technologies for Advanced Paint Systems”

#### 4 Development of a European marine coating portal

This task developed an internet portal providing access to marine coating related data and activities. It was the communication platform for the EcoDock Interest Groups. The site contains links to other sources and a document server to download the information directly. This site needs was periodically updated.

The concepts of the portal and its content as well as regular updates of the content were provided by the work package. The programming of the portal and the implementation of the regular updates was subcontracted to Balance Technology Consulting GmbH.

The first release of the European marine coating portal was implemented six months after the start of the project in July 2004:

Website implemented <http://www.ecodock.net>

The site was regularly updated. Fora for working groups were implemented after 1 year in July 2005.

The site was extensively used by project partners and user group member to share documents in member area.



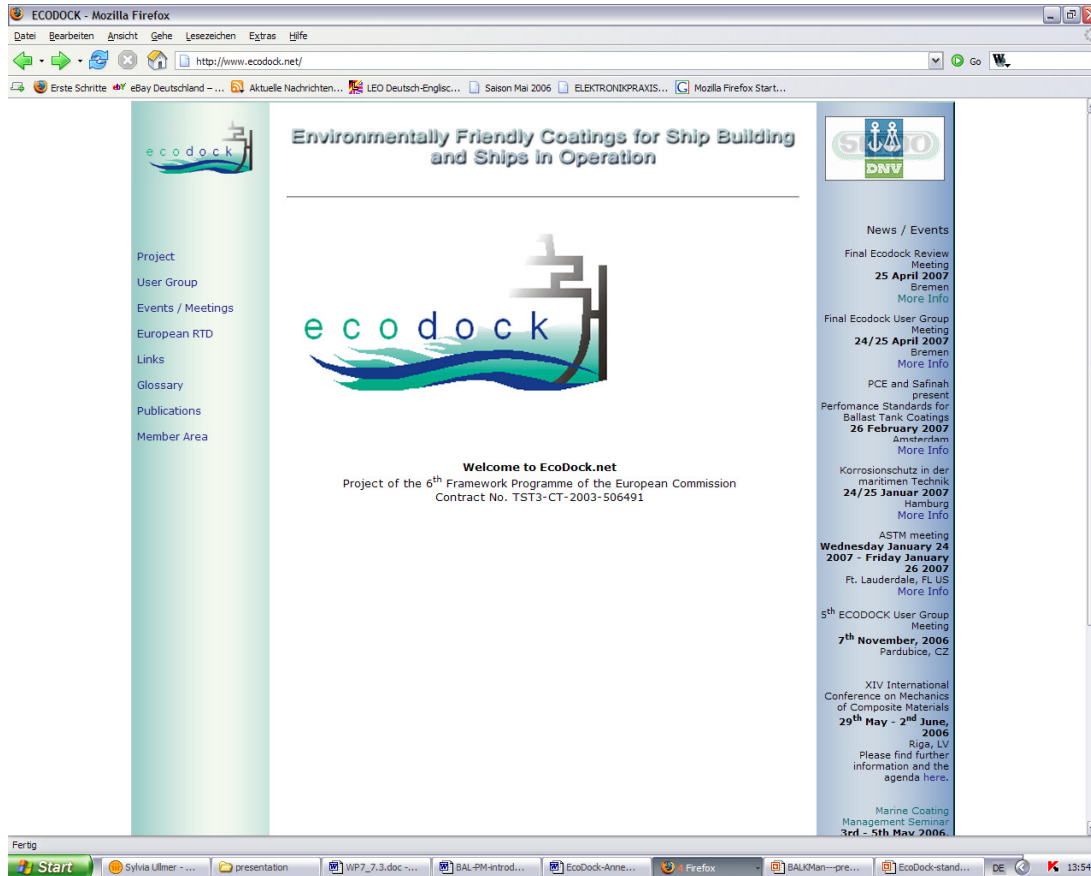


Figure 4: Home page [www.ecodock.net](http://www.ecodock.net)

The **public area** of the marine coating portal provides:

- general project information like partnership, objectives and workplan
- Information on the objectives, target groups and membership of the user group
- Evens/meetings, here user group meetings as well as other coating related events
- Links to the European projects EftCor and ECOPAINT
- Links to partner organisation, paint companies and other interesting sites like IMO and standardisation institutes
- Glossary
- Publications of project partners and other interesting publication
- glossary

Events are in addition announced on the right hand side of each page of the site.



## EcoDock dissemination report

The screenshot shows the EcoDock website in a Mozilla Firefox browser. The main heading is "Environmentally Friendly Coatings for Ship Building and Ships in Operation". The "Events & Meetings" section lists several events:

- Final EcoDock Review Meeting**  
25<sup>th</sup> April 2007  
Bremen, DE
- Final EcoDock User Group Meeting**  
24<sup>th</sup> April 2007  
Bremen, DE
- PCE and Safinah present Performance Standards for Ballast Tank Coatings**  
26 February 2007  
Amsterdam  
More Info
- Korrosionsschutz in der maritimen Technik**  
24/25 Januar 2007  
Hamburg  
www.gl-group.com/congresses
- Meet partners from the EcoDock project at the ASTM meeting**  
Title: Color and Appearance  
Dates: Wednesday January 24 2007 - Friday January 26 2007  
Location: Embassy Suites Hotel; Ft. Lauderdale, FL US  
Event Name: E12 January 2007 Meeting  
In Conjunction With: D01/G03M  
More Info
- 5<sup>th</sup> ECODOCK User Group Meeting**  
7<sup>th</sup> November, 2006  
Pardubice, CZ
- XIV International Conference on Mechanics of Composite Materials**  
29<sup>th</sup> May - 2<sup>nd</sup> June 2006

The right sidebar contains a "News / Events" section with a "Synpo DNV" logo and a list of events including the Final EcoDock Review Meeting, Final EcoDock User Group Meeting, PCE and Safinah present Performance Standards for Ballast Tank Coatings, Korrosionsschutz in der maritimen Technik, ASTM meeting, 5<sup>th</sup> ECODOCK User Group Meeting, and XIV International Conference on Mechanics of Composite Materials.

Figure 5: Events/meetings announced on Marine coating portal

The screenshot shows the EcoDock website in a Mozilla Firefox browser. The "Links" section is highlighted and contains the following information:

- ECODOCK Participants:**
  - Jos. L. Meyer
  - DNV general
  - DNV Maritime, materials, corrosion and coating
  - Odense Steel Shipyard
  - A.P. Muller - Maersk Group
  - Safinah Ltd
  - Synpo
  - University of Newcastle
  - University of Newcastle - School of Marine Science and Technology
  - Center of Maritime Technologies
- Paint Companies:**
  - Ameron International
  - Ameron International, Performance Coatings and Finishes Group
  - HEMPEL A/S
  - Sigma Kalon Group
  - Sigma Coatings BV
  - International Marine Coatings
  - International Yachtpaint
  - Gotun BV
- Other Interesting Sites:**
  - IMO - International Maritime Organisation
  - SSPC - Society for Protective Coatings
  - ISO - International Organisation for standardisation

Additional information includes: "2000 ISO releases a standard for copper release rate measurements (ISO, 2000a and ISO, 2000b)", "British Standards Incorporate", "DIN - Deutsches Institut für Normung e.V. (German Standardization Institute)", "1990: ASTM releases the first standard method for determination of release rates of organic compounds from antifouling paints (ASTM, 2002a).", and "1999: ASTM releases the standard for copper release rate determination (ASTM, 2003)".

Figure 6: Links provided on marine coating portal cover project partners, paint companies, standardisation institutes and other interesting sites



## EcoDock dissemination report

The screenshot shows the EcoDock website in a Mozilla Firefox browser. The main heading is "Environmentally Friendly Coatings for Ship Building and Ships in Operation". A sidebar on the left contains navigation links: Project, User Group, Events / Meetings, European RTD, Links, Glossary, Publications, and Member Area. The main content area is titled "Publications" and lists several articles with their abstracts:

- Novel Polymer Binders Containing Star-Like Methacrylate Nanodomains.** J. VRAŠTIL, V. ŠPAČEK, L. ATĚJKA, B. RYZNAROVÁ, XIV International Conference on Mechanics of Composite Materials, May 2006, Riga
- Marine coating workshop at **Innovation in fabrication technologies workshop**, Flensburg, 23+24 February 2006
- Ecodock presentation held at **EU status seminar**, Rostock-Warnemünde, 9 December 2005
- Behrends, B. and Hufnagl, M. (2005) **An alternative method to measure release rates of copper and organic biocides from antifouling paints.** Submitted for publication in Chemosphere.
- Howell, D. and Behrends, B. (2005) **Measuring the surface roughness and film thickness of cylinders coated with self-polishing antifouling coating.** ENSUS 2005 conference proceedings. In press.
- Standard Test Method for Organotin Release Rates of Antifouling Coating Systems in Sea Water**  
ASTM D5108-90 (2002)  
Abstract:  
1.1 This test method covers the laboratory determination of the rate at which organotin expressed as tributyltin (TBT) is released from an antifouling (AF) coating in synthetic sea water using graphite furnace atomic absorption spectrophotometry (GF-AAS). This does not exclude the use of other analytical methodology for measurement of organotin in sea water such as gas chromatography.  
1.2 The values stated in SI units are to be regarded as standard. The inch-pound units given in parentheses are for information only.  
1.3 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. For specific hazard statements, see Section 7.
- Standard Test Method for Erosion Testing of Antifouling Paints using High Velocity Water**  
ASTM D4938-89 (2002)  
Abstract:  
1.1 This test method covers the determination of erosion rates for marine

On the right side, there is a "News / Events" section listing various conferences and meetings, such as "Final Ecodock Review Meeting 25 April 2007 Bremen" and "XIV International Conference on Mechanics of Composite Materials of Composite Materials 29th May - 2nd June, 2006 Riga, LV".

Figure 7: Marine coating related publications of Ecodock partners, often with abstract are presented at the marine coating portal

The screenshot shows the EcoDock member area login page. The header includes the EcoDock logo and the text "Environmentally Friendly Coatings for Ship Building and Ships in Operation". The BAL-PM logo is visible in the top right. The main content area is titled "WELCOME TO ECODOCK" and contains a navigation menu with links for BAL-PM Start, FAQ, Disclaimer, Imprint, and Webmaster. Below the menu is a login form with fields for "Username:" and "Password:", a "Submit" button, and a link for "Forgot your password? Click here to retrieve your password." The date "Wed, 08-Aug-2007" is displayed in the top right corner.

The screenshot shows the EcoDock member area with several open browser tabs. The tabs include "Start", "Abmeldebildsch...", "presentation", "WP7\_7.3.doc...", "BAL-PM-introd...", "EcoDock-Arme...", "Firefox", "BAL-PM-pre...", and "EcoDock-stand...". The browser window shows the EcoDock website with the member area content.

Figure 8: Member area requires login, here dedicated user rights are assigned to each project partners and user group member

## 5 Exploitation of knowledge by European marine coating knowledge management system - BAL.KMAN

In the final project period, February, March and April 2007, when most of the EcoDock results were completed, the decision was taken to make this knowledge available for future utilisation and exploitation as easy as possible.

The Balance Knowledge Management system – **BAL.KMAN**, which is composed of the three sub-systems **BAL.ASK**, **BAL.PEDIA** and **BAL.eLECT** offer an innovative approach to collect and use company knowledge

- **BAL.ASK** is a powerful solution to store and retrieve documents
- **BAL.PEDIA** supports the discussion and consolidation process to extend available company knowledge
- **BAL.eLect** supports the creation of eLessons.

The BAL-KMAN allows users to:

- Find the information
- Trust the information
- Make utilisation of the information as easy as possible
- Use one integrated solution for all types of users
- Make the information available to those needing it
- Make sure the internal experts have consolidated it into knowledge
- Support discussion of the knowledge (keep it alive)

While **BAL.KMAN** does not require to add “auxiliary information “ to each document and makes sure that users don’t miss any information as it is not just another extra system for searching documents only.

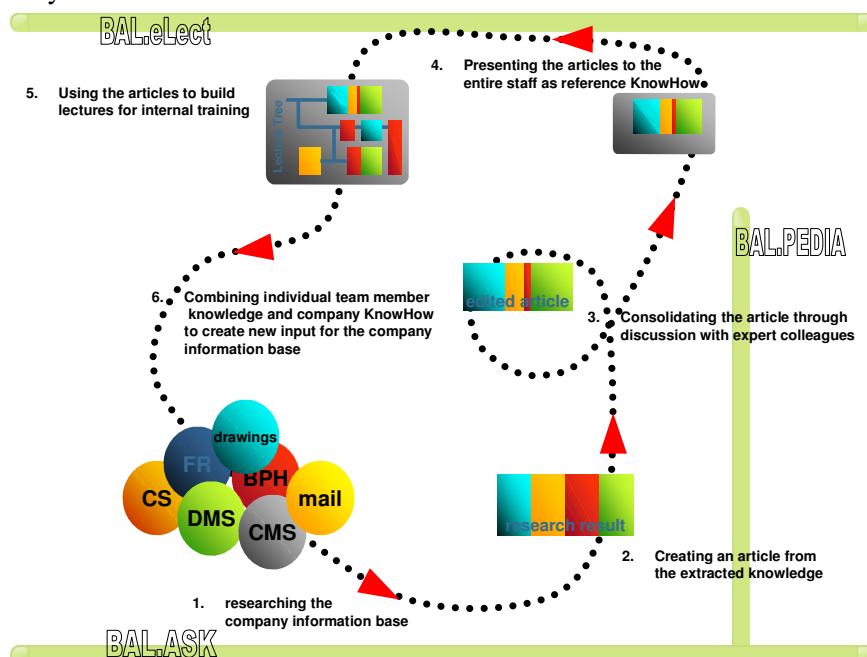


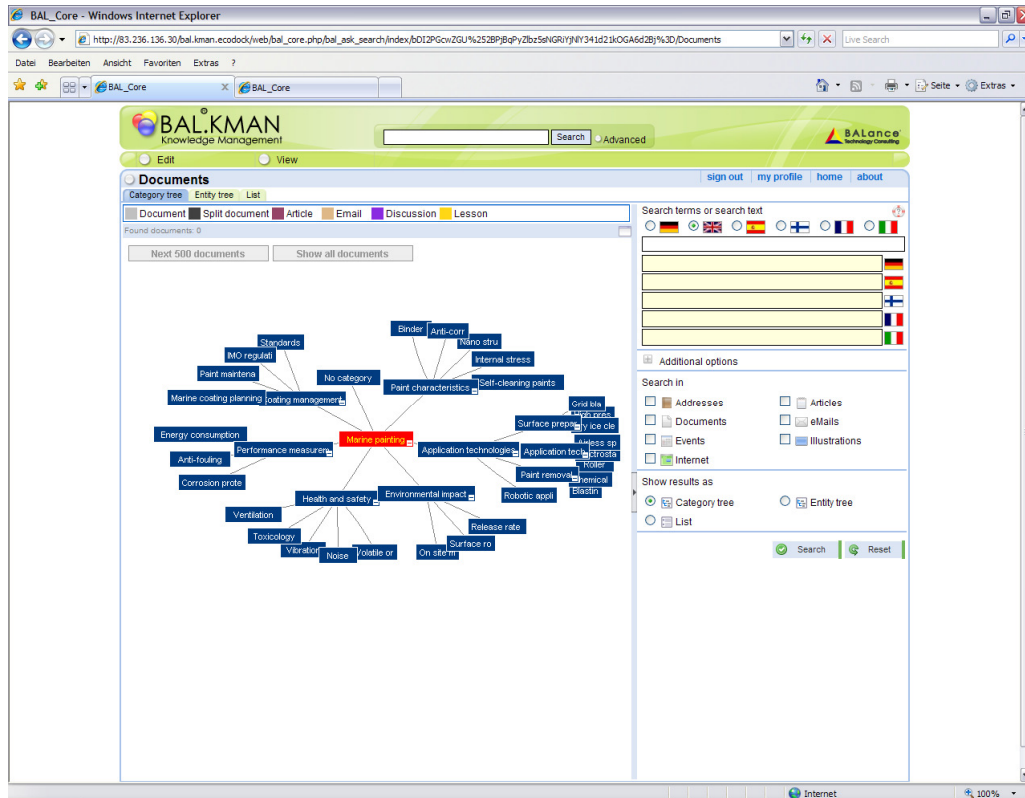
Figure 9: Steps from information to knowledge supported by BAL.KMAN

The company information base is established in a variety of documents. 85 % of this company data is unstructured e.g. Failure Reports, (e)Mails, Best Practise Handbook, Drawings, Company Standards, Content Management System, Document Management System. Knowledge workers spend 2 hours or more per day searching information.

Figure 9 shows the steps which are supported by BAL.KMAN to get from the company information base to reference know-how for the entire staff of the company. BAL.ASK allows for creating articles from this extracted knowledge. Those articles go through consolidation process by discussing it among expert colleagues. By BAL.PEDIA consolidated articles then can be presented to the entire staff as reference "KnowHow". BAL.eLECT allows fore building lectures based on those consolidated articles and thereby supports wide discussion of knowledge and finally. Combining individual team member knowledge and company KnowHow to create new input for the company information base.

In detail the functionalities of BAL.KMAN are as follows:

- Automatically gathers documents in a variety of formats (DOC, XLS, PPT, PDF, ...)
- Categorises documents based upon a company specific model
- Extracts keywords (entities)
- Generates abstracts
- Splits large documents
- Searches for documents, e-mails and articles
  - Boolean search like in Internet search engines
  - Simultaneously in different languages
  - Limitation on specific document types, categories, entities, etc.
  - Fuzzy search
  - Searching for similar documents
- Visualises the result as hyperbolic tree or list
- Displays the documents as HTML, PDF or in their original format
- Supports different languages (German, English, French, Spanish, Italian, Finnish, etc.)
- Semi-automatically translates search expressions
- Creation of articles to capture company knowledge
- Discussion of articles
- Export of documents into articles
- Structuring of articles to training lessions
- Optional interfaces to archiving and document management systems
- BAL.KMAN does not change the original files



**Figure 10: EcoDock BAL.KMAN application – hyperbolic tree**

Some unique characteristics of BAL.KMAN are:

- BAL.KMAN visualises search results as hyperbolic tree (see fig. 10)
- Combines the document base with Wiki technology
- Offers comprehensive multi-language support
- Imports and indexes documents automatically
- Splits large documents to generate more precise search results
- Searches for similar documents

BAL.KMAN realises different concepts for structuring the document base.

Entities and Meta data are:

- Automatically generated from the document upon uploading
- Relevant topics discussed
- Each document might cover a large number of themes
- Information about the document
- Can be generated automatically and manually
- Examples: Author, organisations, project, date, name

In addition category model based upon tree structures is defined by the company (Trees for e.g. product, processes, technologies and organisation). The category model trained using typical documents and documents are automatically assigned during upload process. The current EcoDock category model is a starting point and might be modified to reflect individual requirements.

The current documents, articles and lessons are based on the results (reports) prepared both in EcoPaint and EcoDock. This knowledge base is a starting point and will be extended by other documents representing the company knowledge base of future users.

## 6 Papers and workshop presentations

During Ecodock a number of papers were published by the partners. In addition to organising the user group meetings EcoDock partners contributed to the organisation of other coating related events or gave presentations at seminars and workshops. Furthermore, EcoDock partners were actively involved in national and international standardisation.

A **standard presentation** was prepared by the Work package to support partners in those activities. This presentation gave a brief overview of the EcoDock project and was provided as a baseline for specific presentations.

EcoDock dissemination largely **started at the SMM, 28 September 2004**. A poster for SMM 2004 was prepared and presented and partners were represented and available to inform about EcoDock. This was announced on the EcoDock website.

EcoDock dissemination furthermore provided the **link to other European projects**. This in detail covered

- Ecodock presentation held at “EU status seminar”, Rostock-Warnemünde, 9 December 2005
- Marine coating workshop at “Innovation in fabrication technologies workshop”, Flensburg, 23+24 February 2006
- ECODOCK presentation at ENCOMAR Brokerage Event “Production”, 25 October 2006

The following **scientific publications** were made by EcoDock partners:

- “NOVEL POLYMER BINDERS CONTAINING STAR-LIKE METHACRYLATE NANODOMAINS”, J. VRAŠTILa, V. ŠPAČEKa, L.ATĚJKAb, B. RÝZNAROVÁc, XIV International Conference on Mechanics of Composite Materials, May 2006, Riga
- Howell, D. and Behrends, B. (2005) Measuring the surface roughness and film thickness of cylinders coated with self-polishing antifouling coating. ENSUS 2005 conference proceedings. In press.
- Dickon Howell and Brigitte Behrends 2006: A methodology for evaluating biocide release rate, surface roughness and leach layer formation in a TBT-free, self-polishing antifouling coating. Biofouling, Volume 22, Number 5: 303-315
- Dickon Howell and Brigitte Behrends 2006: A review of surface roughness in antifouling coatings illustrating the importance of cutoff length. Biofouling, Volume 22, Number 6: 401-410
- Behrends, B. 2007: Guest editorial in European Coatings Journal 09/07
- Dissertation: D.J. Howell: Dynamic Testing of Antifouling Coatings. A thesis submitted to the University of Newcastle upon Tyne 07/2007. 311 pp. Papers in preparation: Biofilm development on an antifouling coating
- Book Chapter in preparation: Consequences of antifouling coatings: B. Behrends in BIOFOULING.

ECODOCK partners **present at various conferences** which were also announced at the marine coating portal:

- Marine Corrosion and biofouling conference, Southampton 2004
- ISO group October 2004
- Surface Preparation & Coatings and Environmental Technologies, Joint Panel Meeting, Newport, USA, 20-22nd October, 2004.
- Corrosion Protection Seminar, 19th/20th January, 2005, Hamburg, Germany
- ENSUS Conference, Marine Science and Technology for Environmental Sustainability, 13th/14th April, 2005, Newcastle upon Tyne, UK
- Green Ship Technology, 29th - 30th March, 2006, Hamburg Marriott Hotel, Hamburg, DE
- Marine coating management seminar, 3rd - 5th May, 2006, Chesterfield Hotel, London, UK
- XIV International Conference on Mechanics of Composite Materials, 29th May - 2nd June, 2006, Riga, LV
- Marine Corrosion and biofouling conference, Rio 2006
- ASTM meeting, Title: Color and Appearance, Wednesday January 24 2007 - Friday January 26 2007, Embassy Suites Hotel; Ft. Lauderdale, FL US, Event Name: E12 January 2007 Meeting in Conjunction With: D01/G03M
- Korrosionsschutz in der maritimen Technik, 24/25 Januar 2007, Hamburg
- PCE and Safinah, Performance Standards for Ballast Tank Coatings, 26 February 2007, Amsterdam