

## MET Systems Comprehensive Analyze as One of The Results ONMA-IAMU Project 2010

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**Abstract:** IAMU was founded more then ten years ago. But for this moment there are any publications with compare information about IAMU Members MET system. One of the IAMU Projects 2010 was research Project - “Research of algorithm of collect valuable information MET system IAMU Members Institution and Human Resource Database of IAMU member Institutions”. The research participants have prepared the questionnaire and algorithm for collect and analyze MET information. Information received from selected IAMU Member Institutions in questionnaires form prepared by Project participants. All this information converted in Database form.

The human resource database includes comparison indicators such as an academic degree, a license, a certificate, teaching subjects, research subjects and so on.

Human element is the core concept of the structure of the organization.

Shipping industry needs qualified human resources backed by the enough knowledge and skills for ship operation and for good maintenance based on the excellent seamanship.

Qualified human resources in the maritime society are always required by qualified teaching and researching staff members.

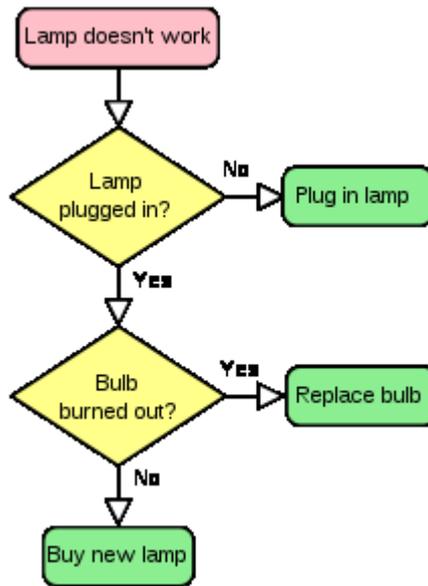
**Keywords:** MET, IAMU, IAMU Project, IAMU Member Institutions, Algorithm, IAMU Database, Human Recourses

## 1. THEORETICAL BACKGROUND.

### 1.1 Algorithm

In mathematics, computer science, and related subjects, an algorithm (derived from the name of mathematician al-Khwārizmī) is an effective method for solving a problem expressed as a finite sequence of steps. Algorithms are used for calculation, data processing, and many other fields. (In more advanced or abstract settings, the instructions

do not necessarily constitute a finite sequence, and even not necessarily a sequence; see, e.g., "nondeterministic algorithm".)



**Figure 1.** Example of algorithm and flow chart

Each algorithm is a list of well-defined instructions for completing a task. Starting from an initial state, the instructions describe a computation that proceeds through a well-defined series of successive states, eventually terminating in a final ending state. The transition from one state to the next is not necessarily deterministic; some algorithms, known as randomized algorithms, incorporate randomness.

### 1.2 Database model

A database model is a theory or specification describing how a database is structured and used. Several such models have been suggested. A database model is the theoretical foundation of a database and fundamentally determines in which manner data can be stored, organized and manipulated in a database system. It thereby defines the infrastructure offered by a particular database system. The most popular example of a database model is the relational model.

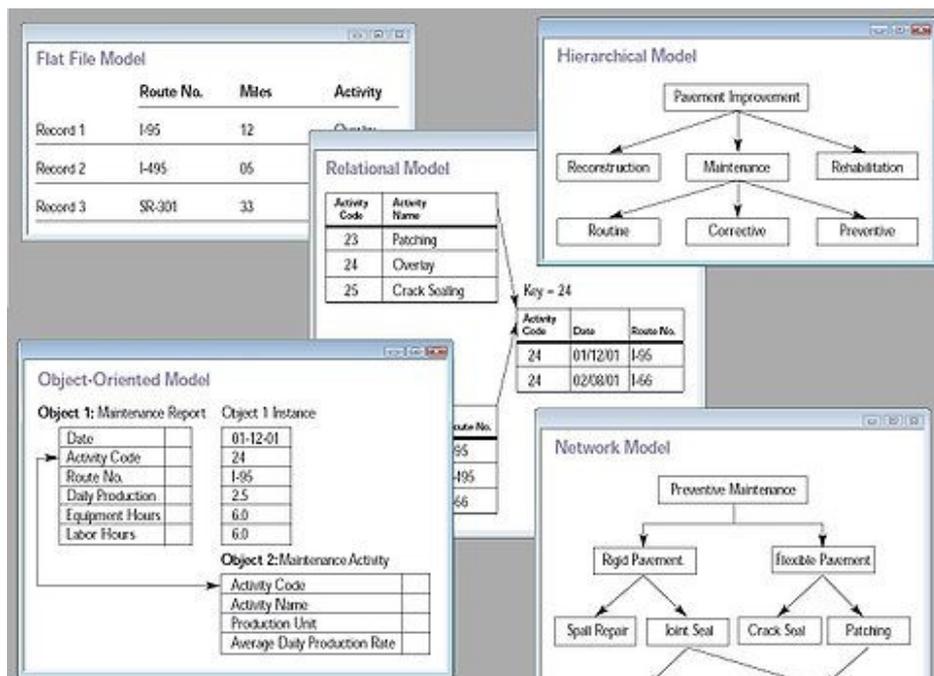


Figure 2. Collage of five types of database models.

A data model is not just a way of structuring data: it also defines a set of operations that can be performed on the data. The relational model, for example, defines operations such as select, project, and join. Although these operations may not be explicit in a particular query language, they provide the foundation on which a query language is built.

## 2. IAMU PROJECT OVERVIEW

One of IAMU 2010 Research Projects was “Research on algorithm of collecting valuable information MET system and Human Resource Database in IAMU Members Universities/Institution”.

- Research Coordinator: - Capt. Dmytro Zhukov, d\_zhukov@mail.ru
- Odessa National Maritime Academy, Rector Prof. Dr. Mykhaylo V. Miyusov ,
- Research Participants:
- Masao Furusho, Professor, Kobe University, Graduate School of Maritime Sciences, furusho@maritime.kobe-u.ac.jp
- Bogumil Laczynski, Professor, Master Mariner, Gdynia Maritime University, acamars@gd.pl

There were three Project Meetings during autumn 2010.

- Project Meeting #1. 15 -17 August 2010 Odessa National Maritime Academy Meeting results: Project Questionnaires and Flow – Chart Algorithm.

- Project Meeting #2. 16.10.2010 Korea Maritime University  
Meeting results: Three sets of the MET information by Project Participants were prepared, analyzed and presented during AGA11.
- Project meeting #3 (Final Meeting)16 -18 December 2010 Gdynia Maritime University  
Meeting Results: During Project meeting were analyze the received from IAMU Members and discusses the Project Results.

Necessary MET information was received from following IAMU Members Institution:

1. Kobe University, Graduate School of Maritime Sciences (Japan)
2. Tokyo University of Marine Science and Technology, Faculty of Marine Technology(Japan)
3. Gdynia Maritime University (Poland)
4. Szczecin Maritime University (Poland)
5. Polytechnical University of Catalonia, Faculty of Nautical Studies (Spain)
6. Admiral Makarov State Maritime Academy (Russia)
7. Admiral Ushakov Maritime StateAcademy (Russia)
8. Arab Academy for Science & Technology and Maritime Transport(Egypt)
9. Batumi State Maritime Academy(Georgia)
10. Istanbul Technical University, Maritime Faculty (Turkey)
11. Karadeniz Technical University, Faculty of Marine Science (Turkey)
12. Kyiv State Maritime Academy (Ukraine)
13. Odessa National Maritime Academy (Ukraine)
14. University of Rijeka, Faculty of Maritime Studies(Croatia)

Response ratio is:

$$14 / 54 \times 100\% = 26\%$$

26% response ratio (quarter of all IAMU Members) – is a very good result for such short time term of the collecting MET information.

All information was analyzing and converted it in e-format Database.

During the Meeting the e-version of the Project IAMU Database was presented by D. Zhukov.

Web-address of the Database is <http://zhukov.seafarer.od.ua/> .

### **3. IAMU DATABASE PRACTICAL USAGE**

#### **3.1 IAMU Database**

On the Fig.3 you can see Database structuring data for IAMU Members Institution..

<b>1. GENERAL INFORMATION OF THE INSTITUTION</b>
<b>2. NATIONAL SYSTEM OF THE EDUCATION AND MET</b>
<b>3. ACADEMIC MARITIME EDUCATION</b>
<b>4. NON – ACADEMIC MARITIME EDUCATION</b>
<b>5. STRUCTURE OF INSTITUTION</b>
<b>6. DIFFERENCES IN NATIONAL MARITIME UNIVERSITIES IF ANY</b>
<b>7. STATISTICS OF NATIONAL MET</b>
<b>8. TRAINING SHIP</b>
<b>9. STRUCTURE OF MARITIME PROGRAMS</b>
<b>10. OBT SCHEME</b>
<b>11. ACADEMIC PERSONAL DATABASE</b>

Figure 3. Proposed format of the collecting information

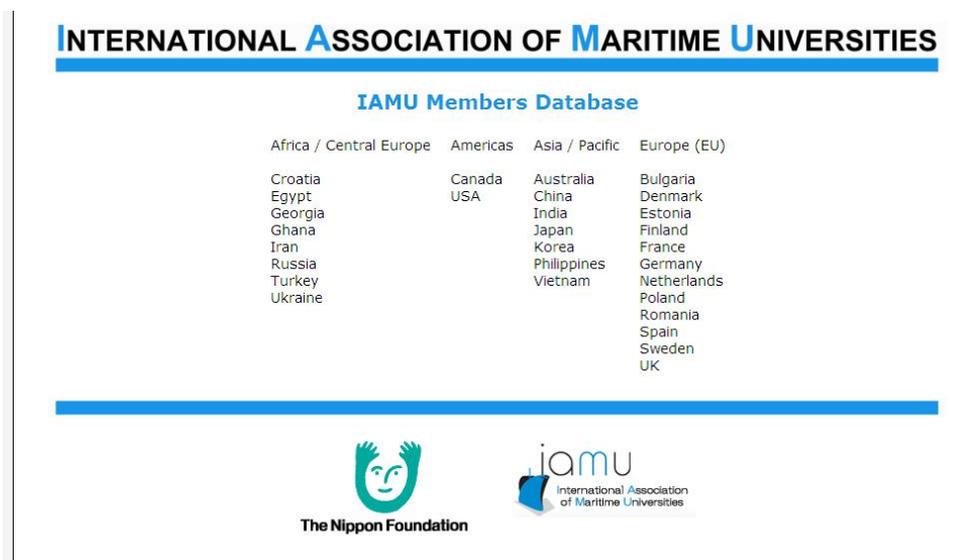


Figure 4. Page screen of the IAMU Database

### 3.2 Example of the IAMU database usage for comprehensive analyze of the MET Systems in Spain and Croatia

#### 3.2.1 Polytechnical University of Catalonia, Faculty of Nautical Studies (Spain), IAMU Region 2

From the moment the Faculty was integrated into the Polytechnic University of Catalonia (UPC), the access to the different degrees taught is governed by the general rules in force in the country concerning the access to university.

The UPC academic and administrative standards of admission, registration, recognition and retention of students are applied.

The national system of education is as follows:

Infant Education		Primary school		
1 <sup>st</sup> cycle	2 <sup>nd</sup> cycle	1 <sup>st</sup> cycle	2 <sup>nd</sup> cycle	3 <sup>rd</sup> cycle
Age 3	Age 6	Age 8	Age 10	Age 12
Secondary school		High school	Pre-registration	
1 <sup>st</sup> cycle	2 <sup>nd</sup> cycle		Exam to access	
Age 14	16	18		<u>UNIVERSITY</u>
	Or	Professional school		
Age	16	Maritime trying cycle		

From 2010, with the adaptation to the European Higher Education Area:

UNIVERSITY		
Degree	Master	Ph. D
1 <sup>st</sup> cycle	2 <sup>nd</sup> cycle	
4	2	
YEARS		

#### 3.2.2 National system of the education and MET in the Republic of Croatia, IAMU Region 4

Through history, as well nowadays, people of Croatia have a strong connection with sea and with all activities within marine industry. Following aforementioned, MET system in Croatia has been developing for a long time. In 2009 it was 160 years since the establishment of the first nautical school in Croatia in Bakar.

Nowadays it follows international requirements laid down in the IMO STCW convention as well as in the EU educational obligations. The main objectives of such system are:

- to maintain highest standards in education, training and certification of seafarers,
- to apply highest standards of safety of navigation as well as highest living and working conditions on board,
- to create motivating environment for seafarer profession.

MET system in Croatia is established through umbrella of the Ministry of the Sea, transport and infrastructure (Administration) as well as Ministry of Science, Education and Sport.

Maritime education is divided into two stages. First stage includes vocational education within nautical schools follows by higher education at the Maritime faculties. Along the Croatian coast there are 6 nautical schools (875 pupils in 2010. have been graduated) and 4 faculties (Rijeka, Zadar, Split and Dubrovnik). In 2009. 327 pupils have been graduated at the nautical schools (nautical and engineering departments) and 281 at the faculties.

MET programs and curriculum are in accordance with STCW requirements, approved by the Administration and the functionality of the system is under constant control. Following graphs present MET system currently established in Croatia.

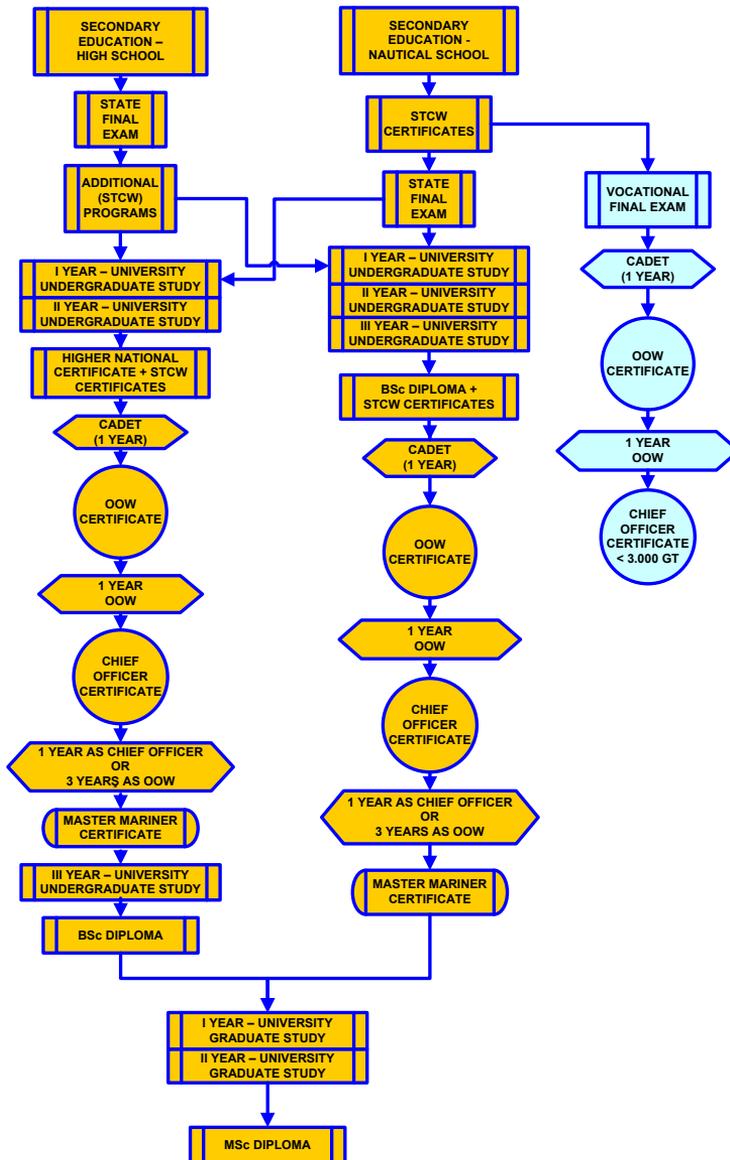


Figure 5. MET System on Croatia

## 4. CONCLUSION

This Project is an initial stage of comprehensive analyze of system of education and MET of IAMU Members Institution.

Tangible results of the Research Project

- Teamwork during the Project established a tight network between ONMA,GMU and KU GSMS
- Based on the theoretical background Project Flow-Chart and Algorithm were prepared
- Were collected, analyzed and converted necessary MET Information from 14 IAMU Members Institution
- **IAMU Database** in e-format was develop and open for user on following web- address
- <http://onma.edu.ua/> and link to **IAMU PROJECT 2010**
- or direct address <http://zhukov.seafarer.od.ua/>
- Received MET information from 14 IAMU Members Institution input to **IAMU Database**
- **IAMU Database** MET information is in the process of continuous update.