

# WEB APPLICATION FOR MARINA RESOURCES MANAGEMENT

I. Magdalenic, Z. Skocir and H. Simic

Faculty of Electrical Engineering and Computing, University of Zagreb  
Unska 3, HR-10000 Zagreb, Croatia  
[ivan.magdalenic@fer.hr](mailto:ivan.magdalenic@fer.hr); [zoran.skocir@fer.hr](mailto:zoran.skocir@fer.hr); [hrvoje.simic@fer.hr](mailto:hrvoje.simic@fer.hr)

**Abstract:** *The aim of the research program, called CETT e-mall, is to develop an operative informational business centre that provides e-applications service for large-, small- and medium size enterprises, selling goods, information and services via Internet. The CETT application is divided into three sections: tourism, goods and custom designed application for marina resource management. This paper presents a custom-designed application for a marina company. The application enables multimedial graphical presentation of each marina, on-line marina booking and custom on-line graphical interface for management purposes.*

**Key words:** *marina, web application, PL/SQL*

## 1. INTRODUCTION

Globalization, restructuring, teleworking, electronic commerce and other hot issues that fit into the broad framework of a 'networked economy' present new possibilities for regional and worldwide co-operation. It should be pointed out that the 'networked economy' understands the completeness of 'business-to customer' (B2C), business-to business' (B2B) and 'business-to-government' (B2G) relations.

Having acknowledged the importance of e-business we, at the Department of Telecommunications, Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia, are carrying out the research project named "Networked Economy", supported by the Croatian Ministry of Science and Technology. We are especially focused on e-business solutions, e-business frameworks and conceptual prerequisites for building necessary e-business infrastructure to ensure smooth transition of the national economy of the developing country to e-business [1], [2]. For this purpose the whole series of projects are conducted [3], [4].

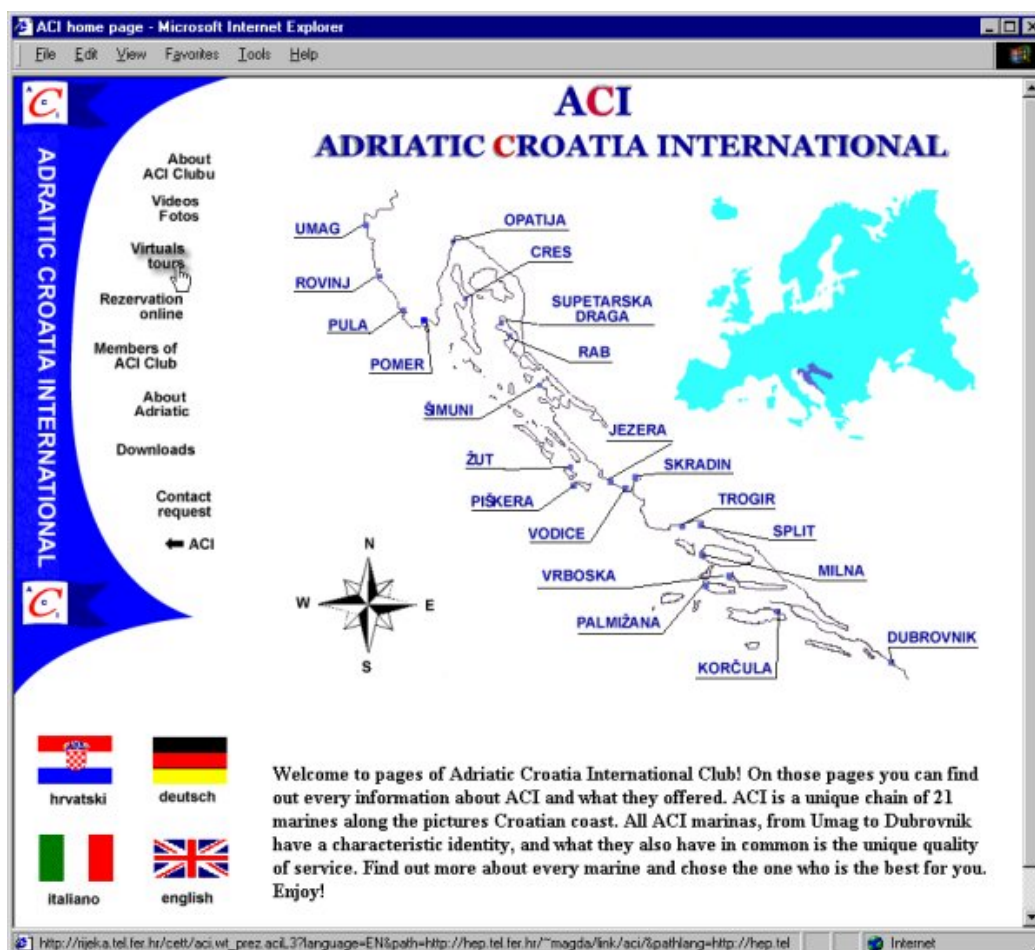
One of them is a research program called CETT e-mall (Centre for Electronic Trading and Tourism) intended to provide e-application services for large-, small- and medium size enterprises that sell goods, information and services via Internet from an operative informational business centre. By re-allocating complexities in the system as a whole, which is done through the hosted services, the companies with limited human and other resources will also be able to benefit from B2B and B2C interactions. Self-service is one of the basic components of e-business support services. From the logical point of view the CETT application is divided into three sections: tourism, goods and custom designed application for marina resource management [4].

This paper presents custom-designed application for a marina company. It is organized as follows: Application goals are explained in Section 2. Section 3 describes logical structure and technical realization of application and is followed by Conclusion and References.

## 2. APPLICATION GOALS

Management of the system with more marinas is not easy because the marinas are physically distant. The goals of our web applications are:

- to make management simpler and more efficient,
- to centralize the data about berths and their reservation,
- to increase the control and decrease the expenses,
- to give multimedia presentation to end users (Fig. 1).



**Fig. 1.** Marina presentation to end-users

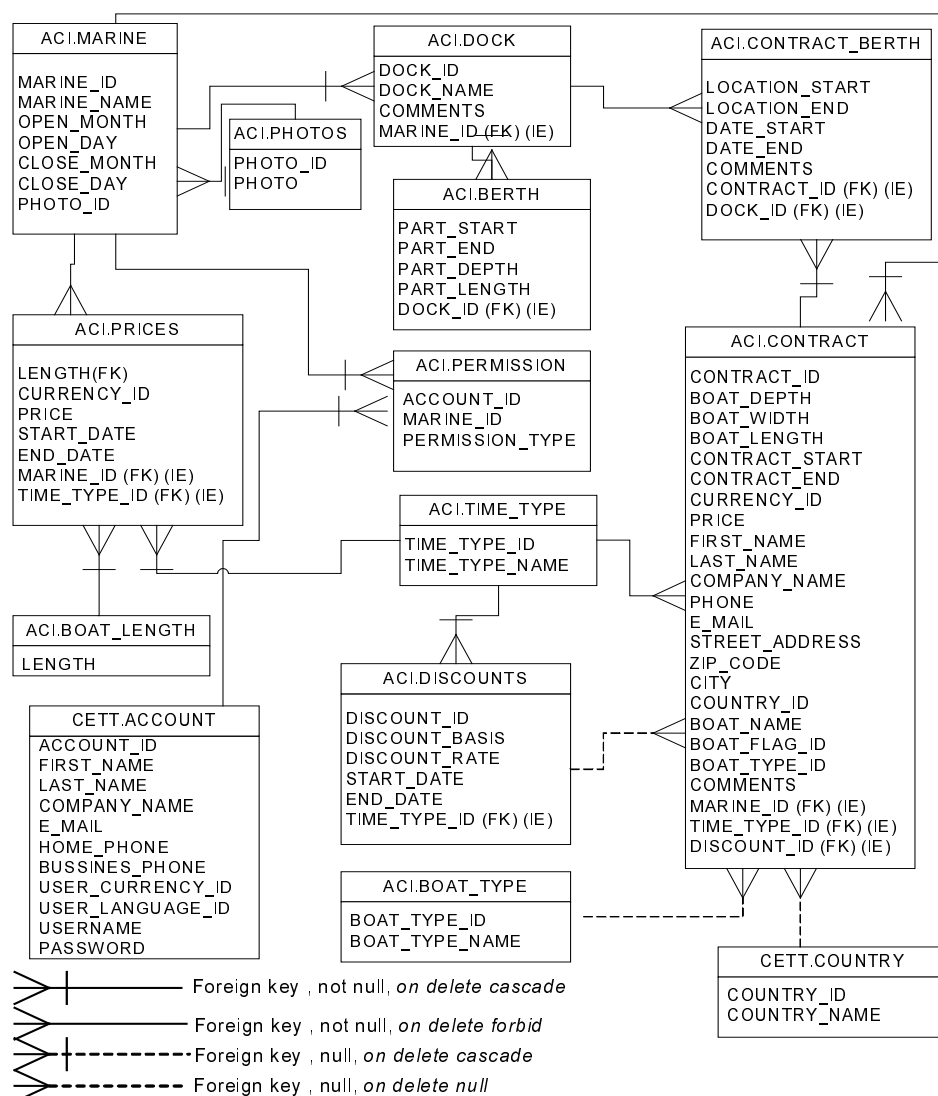
On-line marina booking and custom on-line graphical interface for management purposes are done in this way. Multimedia graphical presentation includes VRML (Virtual Reality Modeling Language) shows.

Special emphasis is put on the reservation procedure and its graphical presentation, which give the review of the berth vacancy at a given time. Better view of vacant berths ensures more efficient use of marina resources.

ACI Marina, the owner of a number of marinas along the Croatian Adriatic coast, is used for testing purposes.

### 3. TECHNICAL REALIZATION

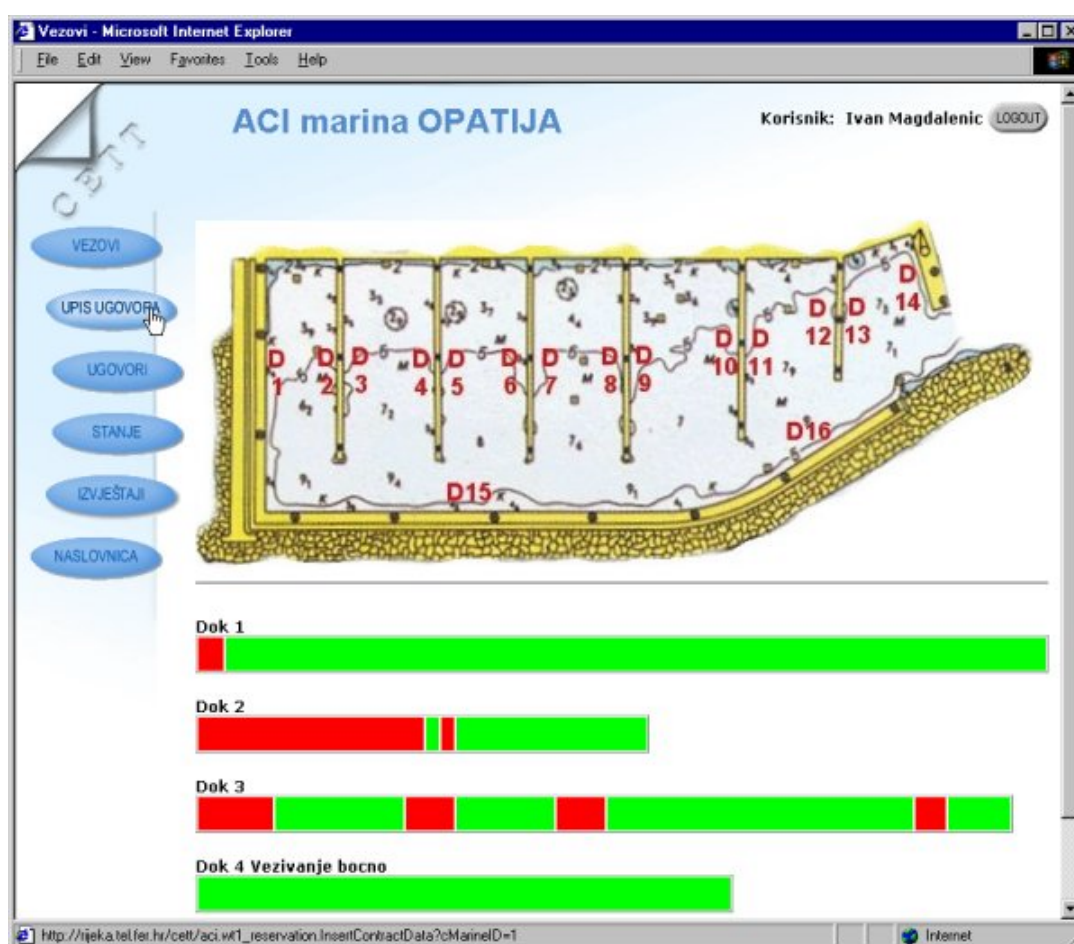
A standard three-tier architecture was adopted. Database tier, founded on Oracle technology, is used for storing the data and application. Fig. 2 shows a database model in the form of an entity-relationship diagram.



**Fig. 2.** Entity-relationship diagram of a database model

The business logic is made with PL/SQL procedures stored in database. PL/SQL procedures are grouped into packages, depending on their functionality. There are two major groups of packages. The first one is called core-packages and they are used for core functionality of web application like a session tracking, logging, authorization, authentication, etc. Some core-packages are the part of CETT, which is presented in [4]. Functionality of the core-packages is applied in the second group of packages called presentation-packages. In the presentation packages is implemented human interface. This kind of organization makes application open and easily expandable. All business logic and functionality of application are kept within database and application server, so the client doesn't have to take care of any software and the data are safer.

Primary scope of the application is a better presentation of marina's resources. This is achieved by graphical presentation of berth vacancy at each point of time (Fig. 3)



**Fig. 3.** Graphical presentation of berth vacancy

A marina owner is able to organize the marina in the most logical way. There are some special modules for marina management that allow opening of a new marina, division of a marina into docks and defining basic physical characteristics of a dock, such as depth and width.

When a new reservation is to be accepted, a user enters physical characteristics of the boat and the time at which a berth is required. With these data the application shows vacant berths. The application supports more berths to be used in a single reservation. This feature is very important because it allows occupancy of a temporarily vacant berth.

Fig. 3 shows berth contract with all necessary data about a customer. Two different berths are connected with this reservation.

There are several levels of permission built in the application. A marina owner is allowed to create and organize a marina. A marina user is allowed to accept the reservation and manage the boats and berths. A marina guest can only view presentation pages and make an on-line reservation.

**Pregled ugovora**

Korisnik: Ivan Magdalenic [LOGOUT](#)

**Vezovi**

Od	Do	Dok	Početak	Kraj
0	3	Dok 1	01.01.2000	01.02.2000
0	3	Dok 1	01.04.2000	01.01.2001

[Dodaj vez ugovoru](#) [Oslobodi vez](#)

**Ugovor**

Gaz broda \*: 3

Širina broda \*: 4

Dužina broda \*: 12

Datum-Početak (DD.MM.GGGG) \*: 01.01.2000

Datum-kraj (DD.MM.GGGG) \*: 01.01.2001

Tip usluge \*: godisnja rezervacija za morski vez

Osnovica popusta: [ ]

Valuta: DEM

Cijena: 123

Fig. 4. Berth contract

The application for management of marina resources is open for integration with the existing information system. Especially interesting can be the integration with video control, which provides constant control of resources in a remote marina. Video control can also be used for presentation to marina users.

#### 4. CONCLUSION

Large-scale adoption of e-business practices is complex tasks, particularly when small- and medium-size enterprises (SMEs) are to play a substantial role in the economic development and restructuring. Some of them will certainly be able to cope with technological and business issues related to these practices, but vast majority will not, and if nothing is done to assist the acceptance of new modes of operation, they will be left aside from the mainstream.

Developing countries, such as Croatia, have 90% or more of their economy in SMEs. If these countries want to develop further, they have to ensure smooth transition of economy to e-business. In other words, they must adopt e-business framework and develop necessary infrastructure.

A research CETT e-mall program, aimed at setting up e-business support services in SME prevailing environments, has been launched. One of the results of this project was a custom-designed application for marina company. It enables the effective management and presentation of marina resources.

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**WEB APLIKACIJA ZA UPRAVLJANJE RESURSIMA MARINA** – *Osnovna namjena istraživačkog programa nazvanog CETT (Centar za elektroničko trgovanje i turizam ) je bio razvoj operativnog poslovnog centra koji će omogućavati velikim, srednjim i malim poduzećima elektroničku prodaju roba, informacija i usluga putem Interneta i to u tri područja: klasični robni produkti, turizam i upravljanje resursima marina. U ovom članku prikazana je razvijena korisnički orijentirana aplikacija za upravljanje resursima marina. Aplikacija omogućava administriranje, rezervaciju i multimedijски grafički prikaz svake marine putem Web-a.*

**Ključne riječi:** marina, Web aplikacija, PL/SQL