



i-Coin

i-Coin platform pilot Finland



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Finland

20.6.2007



HISTORY OF THIS DOCUMENT

Version and date	Author	Description
1.0 / 3.5.2007	Teemu Karvonen	First version was created.

VERSION OF THIS DOCUMENT

Document	Version and date	Status	File
i-Coin platform pilot Finland	1.0 / 3.5.2007	Draft	i-Coin platform pilot Finland.doc



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ICT Solution Provider

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1 SYSTEM STRUCTURE AND FUNCTIONALITY

As the project is in pilot phase, provided system functionality will be very simple and its sole purpose is to prove that the designed architecture and related components are working according to the specifications. The functionality of the system consists of two functions (or services); logging in by using VETUMA or LDAP and searching the connected database for user's real estate information. Basically when a user logs in, information about his real estates are printed on the screen. VETUMA is a service that provides connections to Finnish bank-passwords. LDAP is a local database for maintaining user information, like usernames and passwords.

1.1 Physical structure

Physical system structure describes physical components related to the system, for example different environments, hardware and applications. The physical system structure of the Finnish i-Coin platform is described in the picture below.

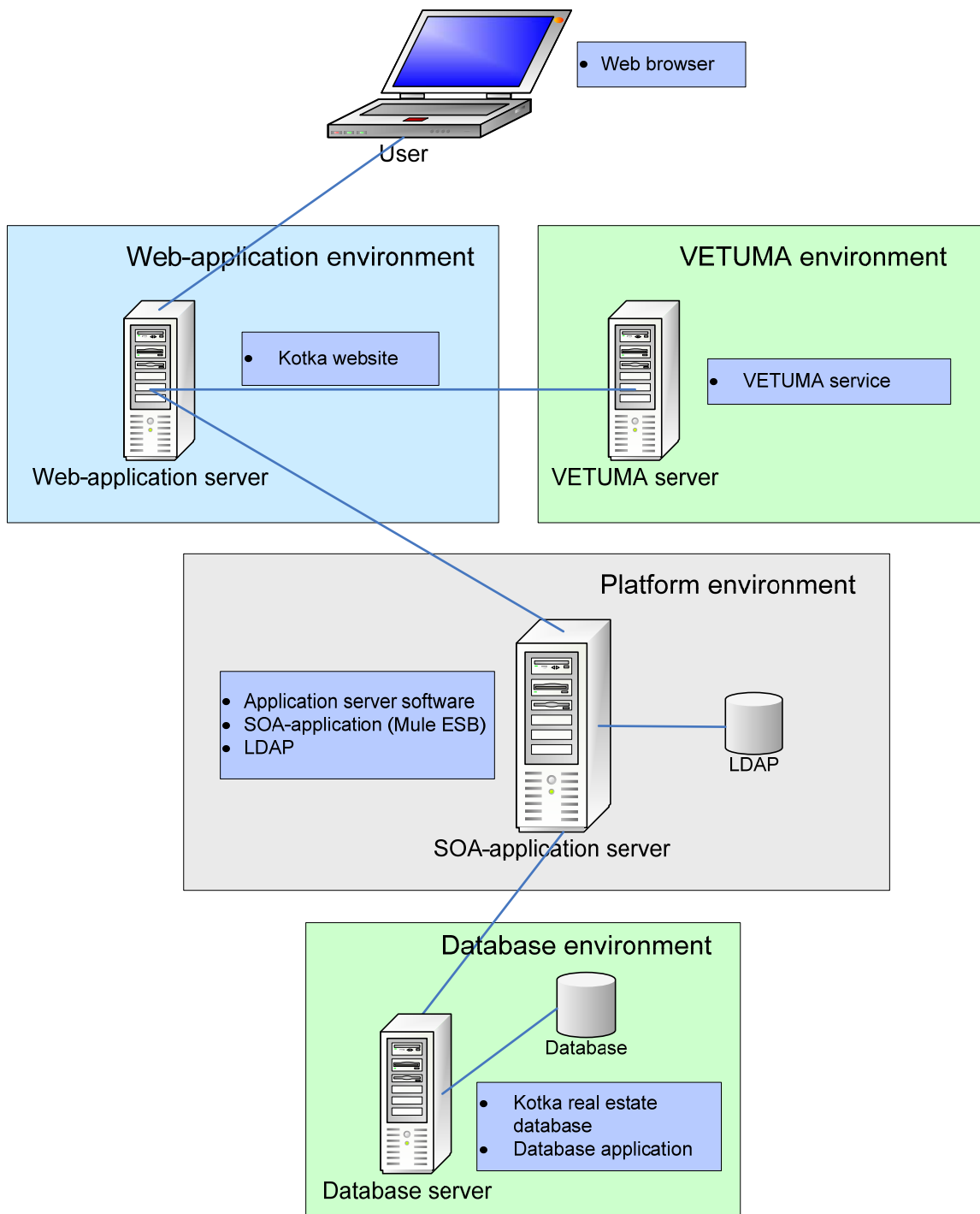


Figure 1: Physical system structure

The physical structure of the Finnish i-Coin platform consists of four different environments; web-application environment, VETUMA environment, platform environment and database environment. The web-application environment contains a server hosting the Kotka website. The user interface of the real estate information service described before is integrated on this website. The VETUMA environment is hosted and configured by an external organization. The platform environment contains a SOA-application server and an LDAP user information database. The server contains application server software (downloadable from



the Internet for free), the SOA-application and a connection to the user information database (LDAP). Finally the database environment contains a database server that runs a database application that connects to the Kotka real estate database.

1.2 Logical structure

Logical structure describes logical components related to the system, for example applications, databases, interfaces and connections between these components. The logical system structure of the Finnish i-Coin platform is described in the picture below. Components that will be implemented in this project are presented in red, ready-made application solutions in green and existing components in blue.

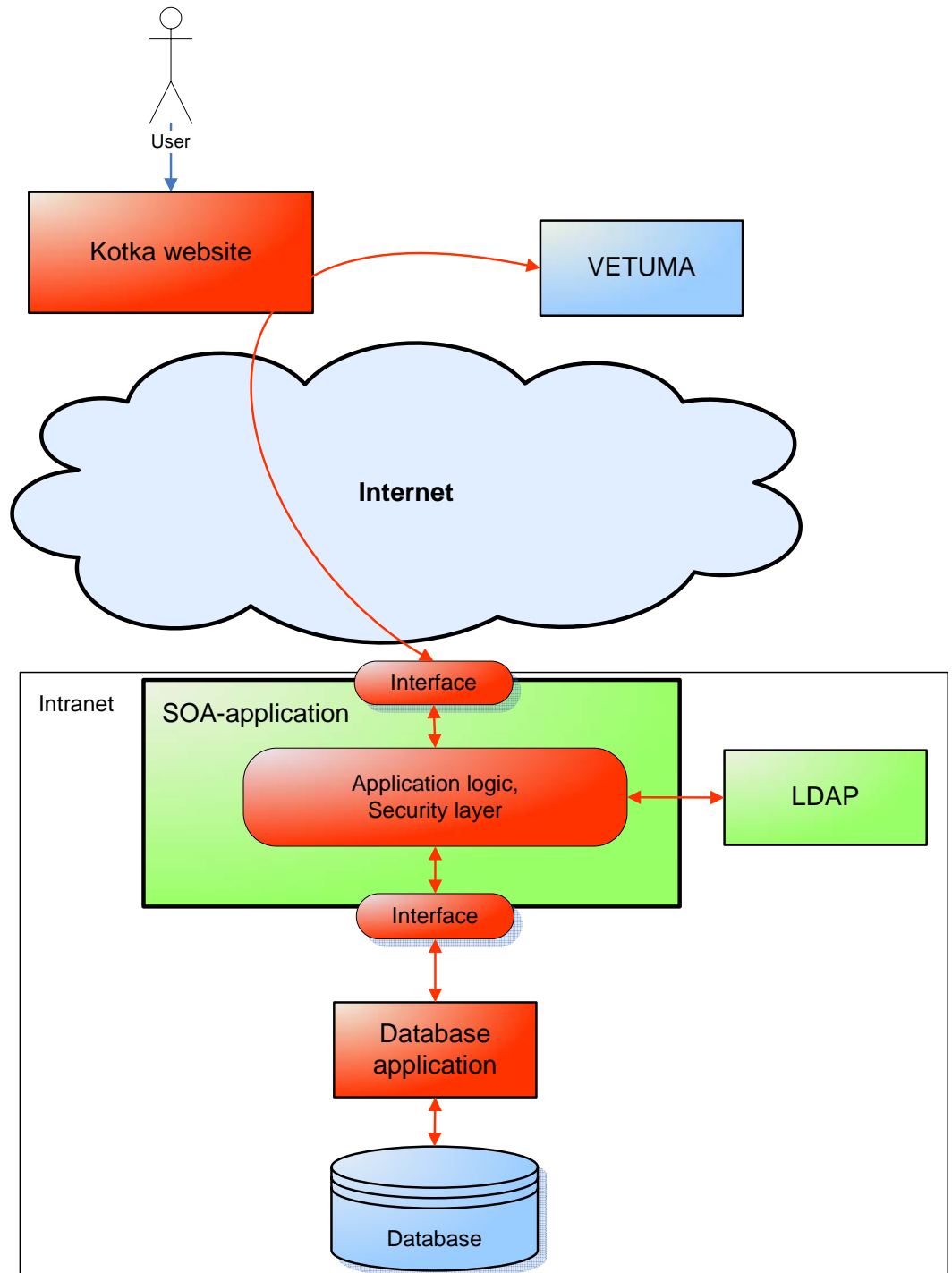


Figure 2: Logical system structure

Logical system structure presented above describes logical components related to the pilot system. Customer's real estate database works as a single data source for the system. VETUMA and/or an open source LDAP database are used for user authentication through the provided interface. Interfaces, application logic and security layer are implemented on open source SOA-application called Mule ESB. The web-application can be implemented separately or the implemented services can be integrated on customer's current system. The



integration should be implemented by the same provider that has provided the current system. If there is a need to change the authentication system from an external system like VETUMA to, for example, another external system like Ubilogin, the functionality behind the Kotka website would remain quite similar. Only some changes related to the service interface need to be adjusted.

1.3 Functionality

The SOA application is a central component of the system. It provides connections between the Kotka website, the LDAP user information database and the Kotka real estate database. It also handles user authorization and service request authentication and authorization (a service request is a message that is generated and sent to the SOA-application by the Kotka website when the user asks to see his/her real estate information).

The functionality of the real estate information service (searching for user real estate information) provided by the Finnish pilot platform is presented below (more technical actions that aren't visible to the user are printed in italics).

1. When the user tries to use the real estate information service and the website detects that login is required, a page with bank logos is displayed to the user. User chooses the correct bank to authenticate with.
2. User is redirected to chosen bank's login-page. User types in his/her username and passwords and confirms them by pressing the OK-button.
3. *The VETUMA authentication service returns authentication information to Kotka website to make inform the website that the authentication is successful (or unsuccessful).*
4. *Kotka website sends the same authentication information (received from the VETUMA service) to the SOA application informing that the authentication is successful.*
5. *The SOA-application generates a session id for the successfully authenticated user, stores the id in its memory and sends the id back to the Kotka website. (Session id is used - instead of username and password - to maintain the thought that "this user has rights to access the service".)*
6. *Kotka website receives the message containing the session id, stores the session id for further use, and sends a service request for the real estate information service to the SOA-application. The service request contains user information (social security number) and the session id, since it is used to authenticate the request-message (to prove that the user sending the request has logged in to the service).*
7. *The SOA application gets the request message, checks if the session id is correct, and sends a service request message for real estate information service - containing user information (social security number) and database username and password - to the database application.*
8. *The database application receives the request, checks if the username and password information are correct, performs a search by the provided user information, and sends back a message containing search results.*
9. *The SOA application receives the response message from the database application and sends a response message - containing search results - back to Kotka website.*
10. *Kotka website gets the response message and handles it.*



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11. User is directed to a page where his/her real estate information is displayed.

What isn't visible in the functionality descriptions is that every connection and message will be encrypted so that the information will travel through secured routes. This enables safe communication between Kotka website, SOA-application and databases.



2 PROJECT DELIVERABLES

The Finnish i-Coin pilot project will produce the following documentation and implemented software components:

<u>Name</u>	<u>Type</u>	<u>Information</u>
i-Coin platform pilot project plan	document	The project plan of designing and implementing the Finnish platform pilot.
i-Coin platform pilot Finland	document	This document. Provides non-technical information about the Finnish platform, the Finnish project of designing and implementing the platform, and components that are common to every country.
Non-technical platform definitions	document	A non-technical document of the produced i-Coin platform in general (not just the Finnish implementation).
i-Coin pilot Finland - application definition	document	Definition and design of the Finnish i-Coin platform pilot. Defines the architecture, components and functionality of the whole pilot system. Definitions include different applications, interfaces, services, and connections to VETUMA and databases (LDAP and (Kotka real estate database).
SOA-application and related components (interfaces and application logic)	software	Implementation of SOA-application including interfaces and application logic. The software package includes the SOA-application framework (Mule ESB) and components implemented on this framework (according to the Mule ESB framework architecture). All the components are implemented to fulfill the needs of the Finnish pilot.
Kotka real estate database application and related components	software	Implementation of database application including interfaces and application logic. The software package includes the database application implemented according to J2EE-specification. All the components are implemented according to the database structure and to fulfill the needs of the Finnish pilot.
Testing plan	document	A small scale plan of how to test the functionality of the pilot system.
Training material	document	A small scale document of how to use the Finnish pilot system and how it works. Contains only functionality that is visible to users.
Project final report	document	A small summary of the project and project closure.

3 OPERATIONS IN EACH COUNTRY

The project deliverables presented in the previous section mostly deal with the Finnish pilot system. The only exception is the “Non-technical platform definitions” -document which is a generic overview of the platform and its functionality. Although the Finnish point of view means that the documents and software implementations aren’t directly applicable to i-Coin projects in other countries, it doesn’t mean that they can’t be used as partly working templates for design and implementation phases.

Every country should have its own project plan, application definition, testing plan and training material -documents if needed. Documents provided by the Finnish project can be used as templates for creating these documents. Finnish documentation should be modified to meet the requirements and needs of each country.

Software packages can also be used as implementation templates for different system. SOA-application implemented in this project is configured to work with Kotka SOA-application server and may need minor reconfigurations to work other systems. Still the SOA-application software package contains some common functionality, like session id creation and message authentication. Database application software package contains a complete J2EE-application which can be used with moderate changes if the target environment supports J2EE-technology.

If needed, Propentus Ltd. can provide a complete design and implementation project or just desired parts of the project. A list of possible separate parts Propentus can provide is presented below.

- System design and documentation
 - Separate design documents according to different agreement
- System implementation
 - Web-application (website) application logic and interface implementation
 - Authentication implementation (for example with UbiLogin or any other method used in desired country)
 - SOA-application configuration
 - SOA-application application logic and interface implementation
 - Database application implementation
- Consultation