Appendix 1

Toward Trust in Quality Assurance Systems

516935-TEMPUS-1-2011-1-FITEMPUS-SMGR

Trust Project

Software requirements specification

File .... Trust_SRS.doc

Version 1.0

History

Version	Modification	Date of Modification
1.0	SRS document	26 April 2013

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1 INTRODUCTION

1.1 Definitions

- **System of Values (SOV)** is the user-defined set of weights for calculating some rating. Applies for selected class of resources.
- **User** – a resource describing a portal user, who can create new ratings, modify and create resources etc.
- **Achievement** – an abstract object (entity) that connects some human (or institution) with the re of its achievement (paper, thesis, etc.). Actually represents a fact that a subject has achieved a object.

1.2 Purpose

1.2.1 System aims

System is aimed to build ranks and rating lists of application area specific entities. In this system, the domain area is the educational process in Ukraine. The system will allow to obtain an independent and adequate information about educational resources in Ukraine, and also it will allow to compare them with each other.

1.2.2 System tasks

- Data collection: register new resource, modify existing resource, check resource description reliability.
- Search entities by filters.
- Rating management: create, modify and delete.
- Build rating list according to desired SOV.
- Refresh computable property.
- Entities browser (universal for any type of entity).

2 OVERALL DESCRIPTION

2.1 Product functions

- User self-registration (profile creation)
- Resource registration, view, modification and deletion
- Search for resources using filters
- Establishing relationships between objects (by selecting one object as a property value for another object)
- Creating, modifying and deleting SOV
- Search for SOV by its parameters
- Creating rating list based on a SOV
- Accessibility through Internet

2.2 User characteristics

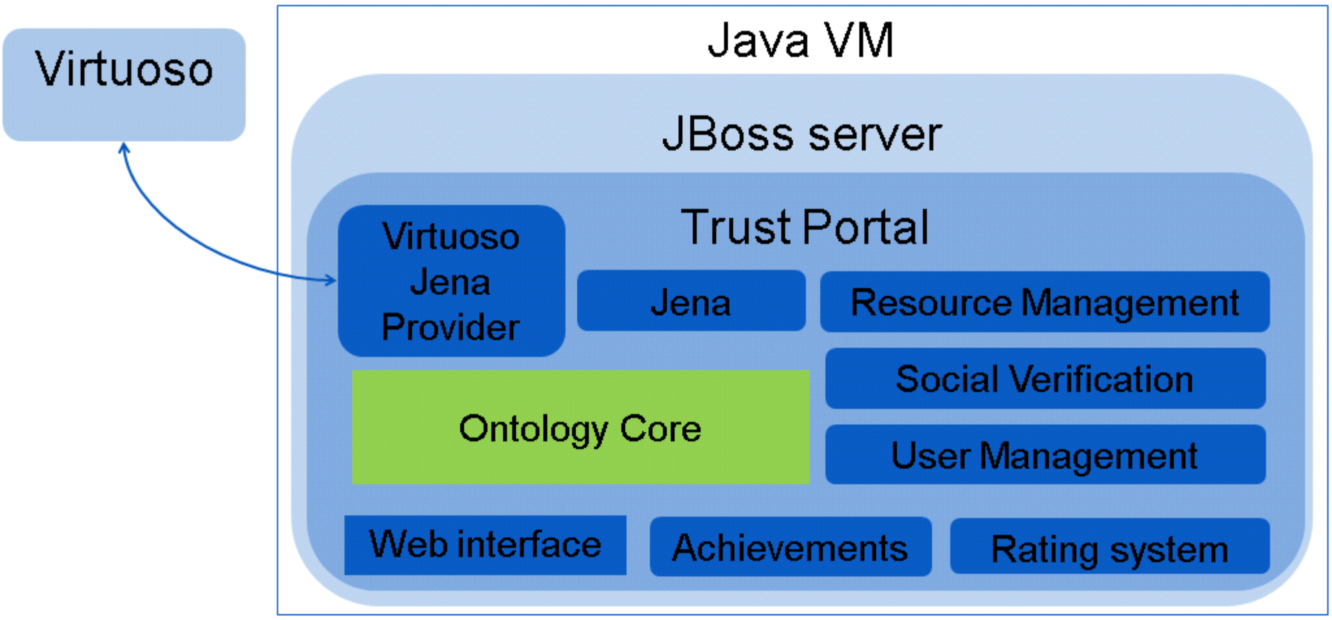
Guests can only browse existing portal resources and build ratings based on SOV. **Registered users** have the ability to create and modify any system resource, to save his own SOV and rating lists.

2.3 Constraints and assumptions

- **All users input data fairly** - no confirmation needed
- **System application area**: country-wide
- **System language**: interface will be localized for Ukrainian and English, data is inputted in sing restricted language (Ukrainian). User is responsible for language consistency.
- **Educational establishment model** is simplified (based on KNURE internal structure)

- **Response mode:** System processes users requests online
- **Unprejudiced results:** Rating calculated by the system depends only on internal SOV those created by the users.
- **Time dependent features**: All facts in the system are true for current moment, editing action used to update the correctness of the data.
- **Accounting entities** are depend on application areas and can vary. All entities are divided active and passive. None but active entity can register themselves. All passive entities registered by active entities. Active entities are users and they may modify all passives, e other actives (user profiles).

2.4 Suggested architecture



Architecture shown in Figure 1 may be used

Figure 1 – suggested system architecture

3 SPECIFIC REQUIREMENTS

3.1 Ontology

3.1.1 General concepts

Ontology can be modified only by ontology engineer, but not by ordinary users.

Registered users are to collect knowledge base content: their own profiles, education resources, articles, theses etc.

The portal ontology is divided logically onto two general components: domain ontology (the domain is Ukrainian education system) and service ontology containing auxiliary classes and properties for system business logic, resource registration support etc.

3.1.2 Calculated properties description

Calculated properties are attributes which values are calculated at some moment of time, but not in real-time, when user involves it with his request actions. This approach may improve system response and provide data consistency.

The case which would be implemented in pilot version is to schedule all recalculations and values normalization in correspondence with system settings. So they all runs at night-time, for example (Ukraine has only one time zone), when system load is minimal.

3.2 Resource Management

3.2.1 General aspects

There should be possibility to register, view and edit resources. The resource deletion can be done only in the case if no other resource has links to the deleting resource.

Resource registration is a logically separated stage from system user profile registration.

3.2.2 Registration specifics

To register new resource user had to select the resource type. After selecting the type (i.e., determining what type of resource will be added to the system), the list of properties for selected resource type will be shown.

Property value edit field should be situated nearby text label with property name. This field type should be chosen dynamically dependently on value type: text field for characters (textual data) and numbers, date-picker for date-times, and special button if there's a need to pick some object value.

Validation can be performed right after the form was submitted to server and validation errors may be displayed as some specially colored alert.

3.2.3 Social verification

There should be implemented social verification functionality, which will allow to verify property values adequacy using the voting.

3.3 Achievements

All achievements may be created during registering new achievement object (e.g. paper, thesis, patent etc.). Achievement objects has the ability of specifying its author (one or more if it is allowed by specified resource type). Also the user may want to share a benefit from this achievement with some organization or department, so he should be able to specify it.

3.4 User Management

3.4.1 Registering new user

User register himself in the system with the help of appropriate form. There are login (which may be a real user e-mail address) and password data to be entered. Also the user may choose a resource class, which can describe him as a person within specified domain.

3.4.2 Storing user profile

User profile storing may be implemented like in the most popular content management systems, where the email address is used as a login to the portal. All passwords should be stored in encrypted state to avoid ability of direct password extraction from portal's data source. Classic “Forgot password” scheme is also should be implemented to recollect the password if it was lost. In this case newly generated password will be sent to user's email address.

3.5 Ranking Management

The rating can be created for some resources based on achievements that they have received and the values of some properties. Each user can build own rating of various resources.

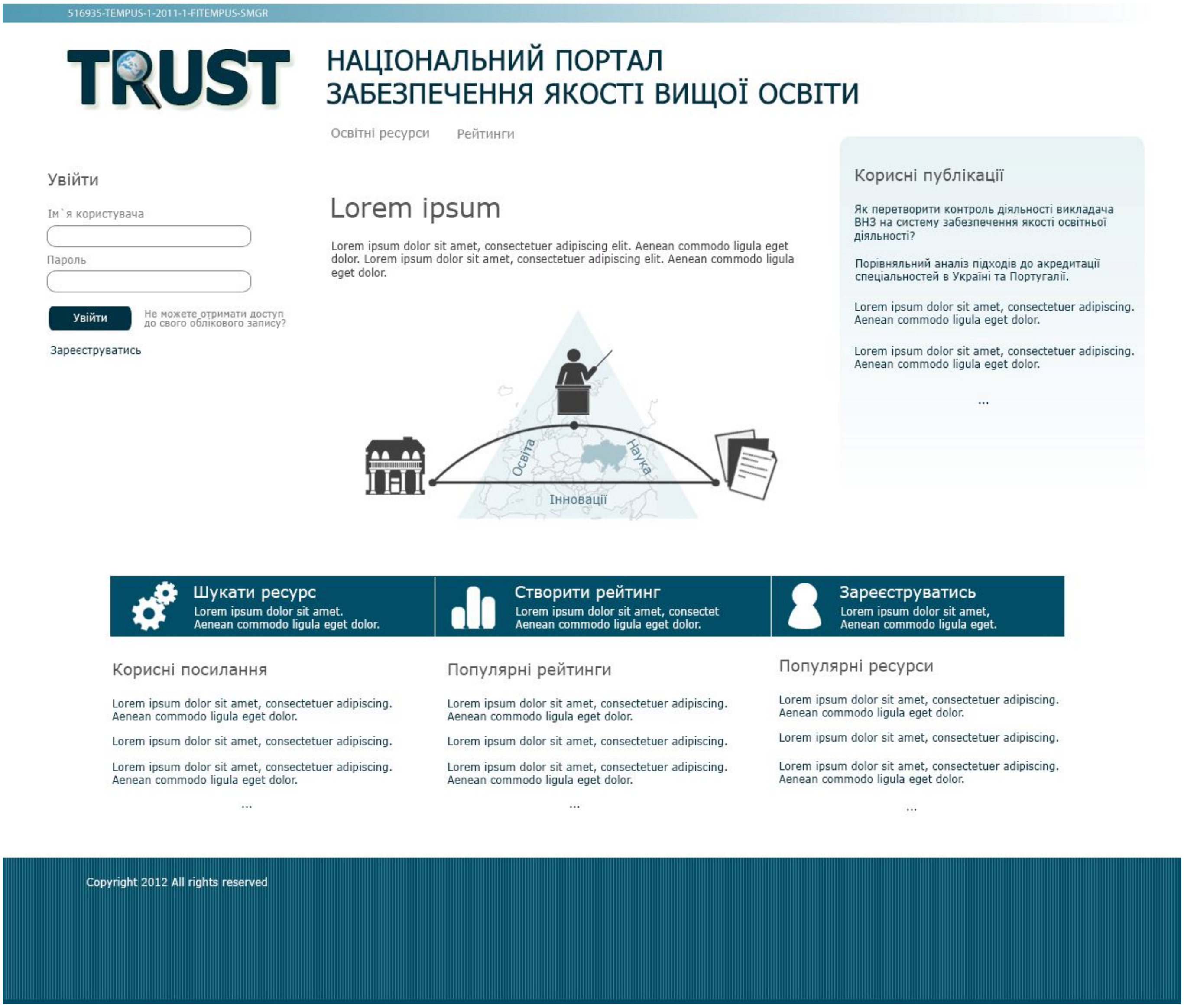
Rating is created using a system of values. System of values (abbreviated SOV) is a set of weight coefficients for properties. SOVs are created and used by portal users to build resource rankings.

Users can create, edit and delete their own ratings.

4 USER INTERFACE EXAMPLES

Several examples how user interface may look like.

1. Home screen for unauthorized user:



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TRUST

НАЦІОНАЛЬНИЙ ПОРТАЛ
ЗАБЕЗПЕЧЕННЯ ЯКОСТІ ВИЩОЇ ОСВІТИ

Освітні ресурси   Рейтинги

Увійти

Ім`я користувача

Пароль

Увійти   Не можете отримати доступ до свого облікового запису?

Зареєструватись

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Корисні публікації

Як перетворити контроль діяльності викладача ВНЗ на систему забезпечення якості освітньої діяльності?

Порівняльний аналіз підходів до акредитації спеціальностей в Україні та Португалії.

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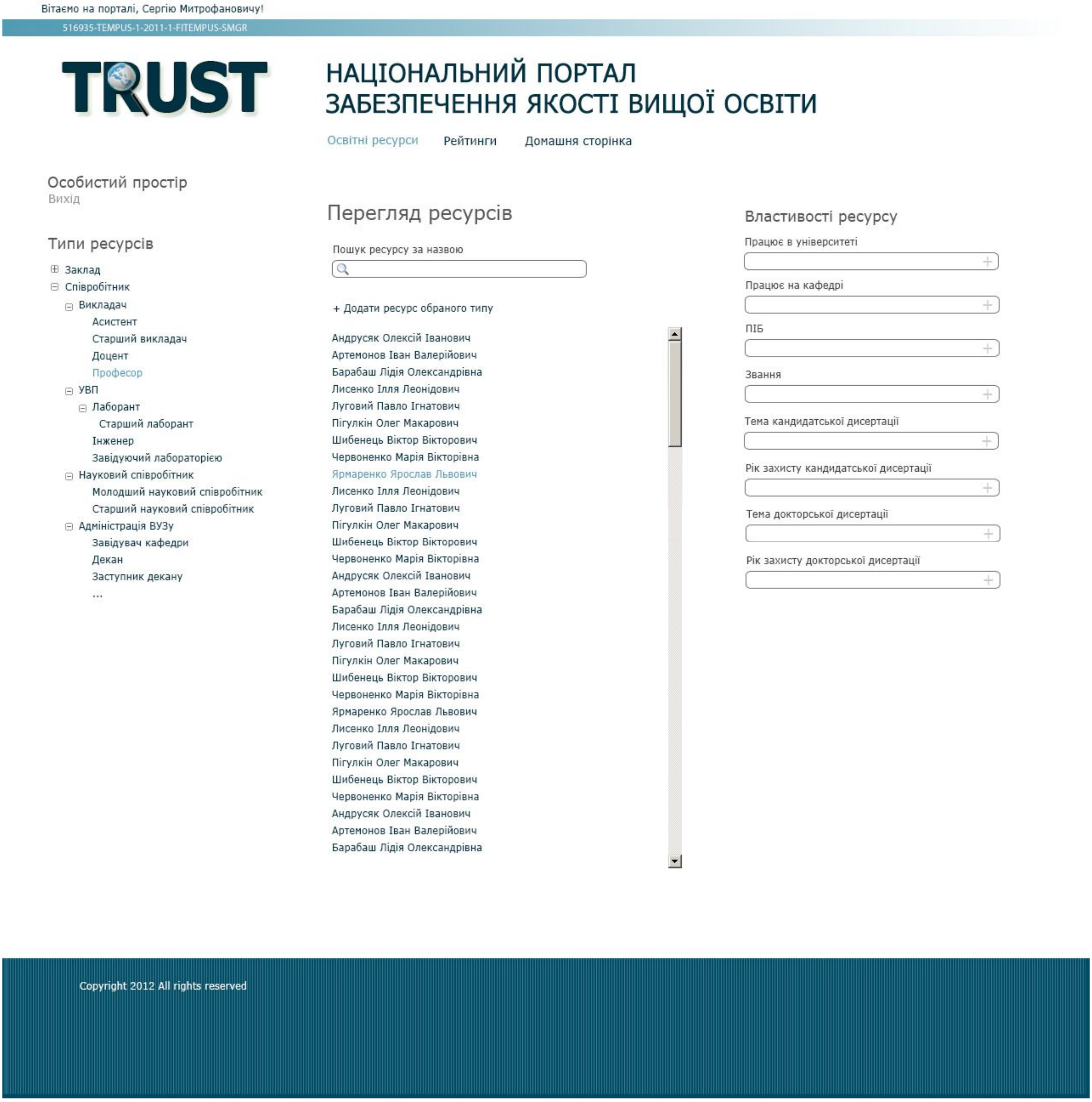
2. Resource browsing.



Вітаємо на порталі, Сергію Митрофановичу!

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TRUST

НАЦІОНАЛЬНИЙ ПОРТАЛ
ЗАБЕЗПЕЧЕННЯ ЯКОСТІ ВИЩОЇ ОСВІТИ

Освітні ресурси Рейтинги Домашня сторінка

Особистий простір
Вихід

Типи ресурсів

- ⊞ Заклад
- ⊟ Співробітник
  - ⊟ Викладач
    - Асистент
    - Старший викладач
    - Доцент
    - Професор
  - ⊟ УВП
    - ⊟ Лаборант
      - Старший лаборант
    - Інженер
    - Завідуючий лабораторією
  - ⊟ Науковий співробітник
    - Молодший науковий співробітник
    - Старший науковий співробітник
  - ⊟ Адміністрація ВУЗу
    - Завідувач кафедри
    - Декан
    - Заступник декану
    - ...

Перегляд ресурсів

Пошук ресурсу за назвою

+ Додати ресурс обраного типу

Андрусяк Олексій Іванович
Артемонов Іван Валерійович
Барабаш Лідія Олександрівна
Лисенко Ілля Леонідович
Луговий Павло Ігнатович
Пігулкін Олег Макарович
Шибенець Віктор Вікторович
Червоненко Марія Вікторівна
Ярмаренко Ярослав Львович
Лисенко Ілля Леонідович
Луговий Павло Ігнатович
Пігулкін Олег Макарович
Шибенець Віктор Вікторович
Червоненко Марія Вікторівна
Андрусяк Олексій Іванович
Артемонов Іван Валерійович
Барабаш Лідія Олександрівна
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Ярмаренко Ярослав Львович
Лисенко Ілля Леонідович
Луговий Павло Ігнатович
Пігулкін Олег Макарович
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Червоненко Марія Вікторівна
Андрусяк Олексій Іванович
Артемонов Іван Валерійович
Барабаш Лідія Олександрівна

Властивості ресурсу

Працює в університеті

Працює на кафедрі

ПІБ

Звання

Тема кандидатської дисертації

Рік захисту кандидатської дисертації

Тема докторської дисертації

Рік захисту докторської дисертації

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5 NON-FUNCTIONAL REQUIREMENTS

5.1 Hardware restrictions

- User requests processing speed is limited with server computational power.
- Response dispatch speed to the user depends on the Internet connection speed and the number of concurrent users.

5.2 Software limitations

- Virtuoso may be used as a repository of ontological data (http://virtuoso.openlinksw.com/).
- Virtuoso server has limitations on maximal number of triplets.
- Some computable property values can be only recalculated in scheduled mode (normalized values, remote values querying etc.) So consumers may retrieve ranks based on last successfully calculated values only (e.g., valid for the previous day).
- Ontology (classes definition, not instances) can be modified only by ontology engineer, but not by ordinary users.

Was accepted by the protocol of General Assembly conference of April 19, 2013 (Chernivtsi, Ukraine) by the project 516935-TEMPUS-1-2011-1-FITEMPUS-SMGR (refined based on the training results of procedures that took place in March 2013).