



IRVAS - PROGRESS REPORT - June 19, 2017

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W3.5

Title: **Developed eLearning platform**

Type: Service/Product

Due date: 14-10-2017

Description: Development of e-Learning platform for online PT&SCHE based on the latest technological advancement and pedagogical achievements including mobile e-Learning and learning activity management conception. Approach is based on strong structuring learning content granularization and reusability. The pilot e-Learning courses for three PT and SCHE programs will be developed.

1. Activities:

Activity 1:	Preparation of the supporting document "LMS selection criteria - an Academic perspective" from the perspective of
Status: Final version of documents on Serbian and English Link:	
Activity 2: Status:	Development Platform selection ODOO development platform is selected
Activity 3: Demo installation of the selected Platform	
Status:	The odoo platform is installed and development and test environment





	established on one of the BMU servers.	
Activity 4:	The vision of the architecture of the future eLearning Platform	
Status:	High Level vision and architectural design of the elearning platform. In progress - Draft version	
Activity 5: Status	Development and Customization Test version available at BMU server URL: http://89.216.56.113:8069	
Activity 6:	Template for SCHE Program content preparation for eLearning Platform	
Status	Draft version is available on Google drive Link:	

2. Next Activities:

Activity 7: up to 15. august	Finishing development and make final tests
Activity 8: up to 15 Sept.	Installation of final version on 2 production enviroments, VISER and BMU
Activity 9: up to 15. august	Produce User Documentation in a form of a SCHE course
Activity 10: up to 10.oct	Final adjustments, bug fixes, and support for setting up the courses content





3. Some facts about the selected ODOO Dev Platform

Based on the conclusions of the document for the selection of LMS platform, it was clear that we should choose a platform that has the following characteristics:

- Open source
- Matured (graduated)
- Suitable and very open for developing broad spectrum innovative applications that are easy to integrate with other modern application and meet expectations that students have.

According to these requirements, **Odoo** is the platform of choice:

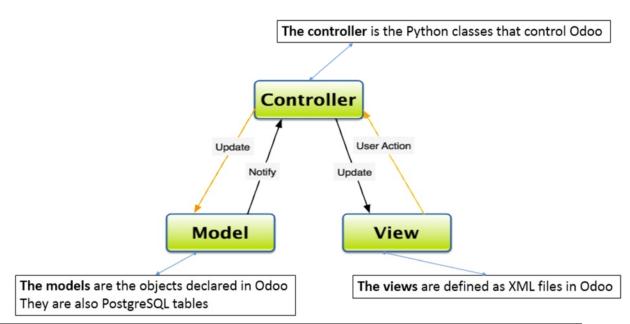
- 1. **From Wiki:** "*Odoo* is an all-in-one business software capable of covering all business needs, including <u>CRM</u>, Website/e-Commerce, billing, accounting, manufacturing, warehouse- and project management, and inventory, all seamlessly integrated"
- 2. 12 years of continuous development of the open source community that counts more than 2000 developers led by the Brussels' company Odoo S.A Odoo S.A is recognized as an example of innovation, potential, growth and success in the Belgian economy, Odoo has been chosen by the European Commission and the European Investment Bank (EIB) to illustrate the 315 billion euro investment plan jointly launched by the two institutions to foster business competitiveness



4. One of the Top 10 Open Source.



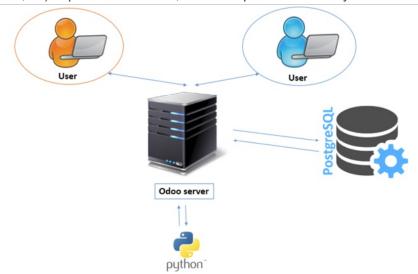
- a. http://www.tgdaily.com/technology/10-best-open-source-software-in-2017
 - 1. LibreOffice
 - ii. 2. FlatPak
 - iii. 3. Rocket.Chat
 - iv. 4. Mattermost
 - v. 5. Odoo
 - vi. 6. iDempiere
 - vii. 7. SuiteCRM
 - viii. 8. Alfresco
 - ix. 9. Camunda BPM
 - x. 10. Talend Open Studio
- 5. Odoo is built upon a Model-View-Controller (MVC) architecture. One of the primary goals of this architecture is to separate the visual display of the information from the business rules and management of the underlying data.



- 6. Odoo system is formed from three main components:
 - a. **PostgreSQL database server:** which contains all of the databases, each of which contains all data and most elements of the Odoo system configuration.
 - b. **Odoo application server:** which contains all the enterprise logic and ensures that Odoo runs optimally. One layer of the server is dedicated to communicate and interface with the PostgreSQL database, the *ORM engine*. Another layer allows communications between the server and a web browser, the Web layer.
 - c. **Web client:** Which provides user interface, it is running in a web browser as Javascript application. The client issues a request to the server, gets data back and display the result (e.g. a list of customers) in different ways (as forms, lists,

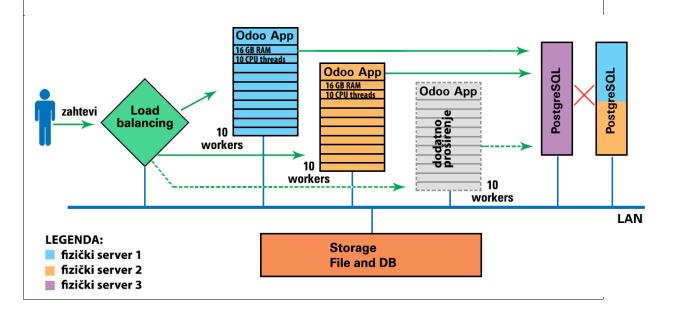


calendars, ...). Upon user actions, it sends queries to modify data to the server.



7. Scalability.

ODOO is very flexible and scalable. It can be used in systems with only a few concurrent users, but it can easily be extended to a system that can be used by a few thousand users, as is the case with the installation in the Portuguese Ministry of Education. The following figure shows the physical architecture of such kind an implementation.







4. Vision of the eLearning architecture for PT&SCHE

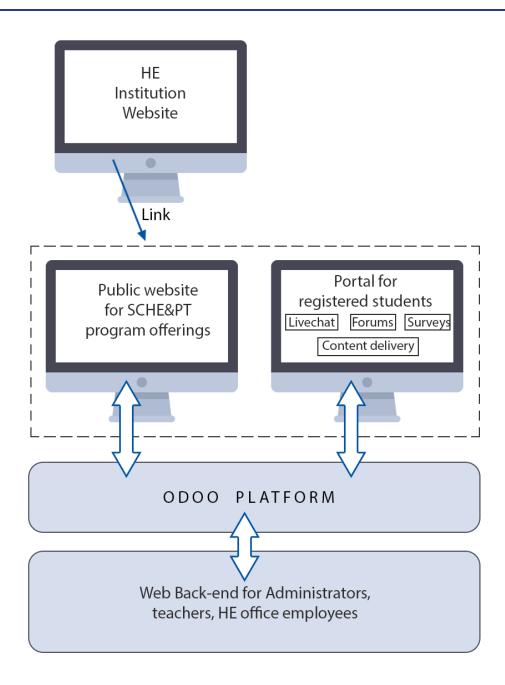
The following figure represents a global vision of the architecture of the eLearning platform of an one HE institution. The platform consists of 3 interconnected units:

- Odoo platform itself
- Beckend application for PT@SCHE program administration
- Students Portal

The student portal is realized as a standard website, and it enables easy connection to the existing web site of a HE institution. This ensures consistent expansion of the existing websites of HE institutions which will organize PT&SCHE education.

This architecture should provide the automation of the complete education process within PT&SCHE program, starting with enrollment for a particular program, through the delivery of study materials to the examination.





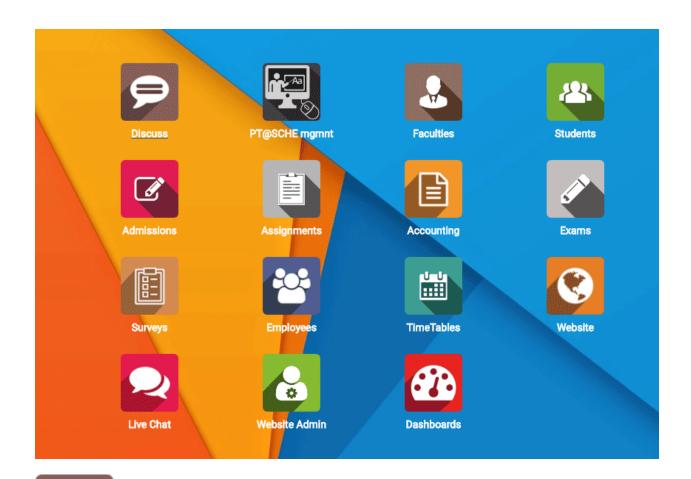
4.1 Back-End

The Back-end component provides authorized access to the eLearning platform users, and through certain access rights and roles in the system of PT&SCHE education it provides access





to individual modules. The following figure shows a dashboard with all the available Back-end modules, which are used by HE staff and employees.

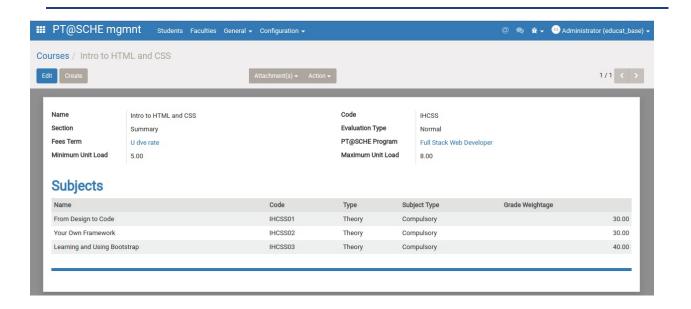


Discuss is a module for exchanging messages between all users of the platform, through email, or chat.

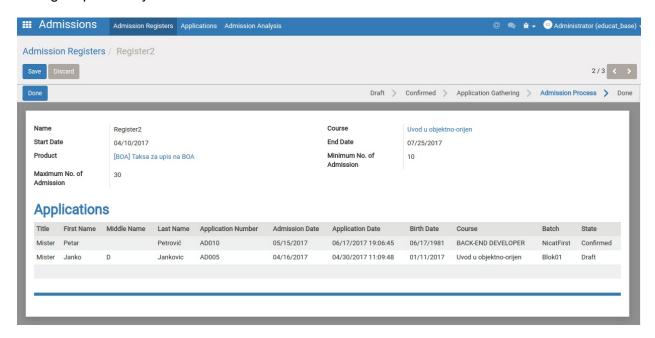
PT&SCHE Management is the key module for the organization of the structure of PT&SCHE program. One example for the content creation of a program is displayed on the figure below:







Admissions is a module that supports the whole student enrollment process through a previously defined workflow.

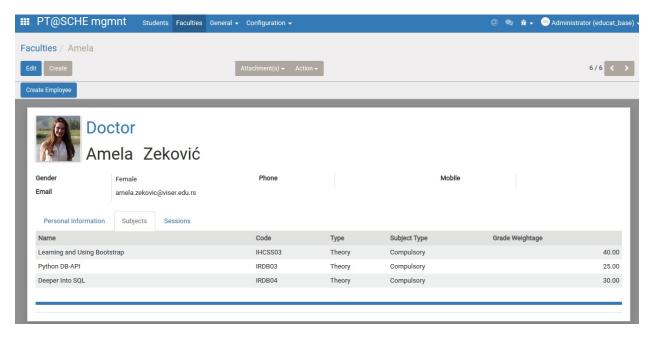






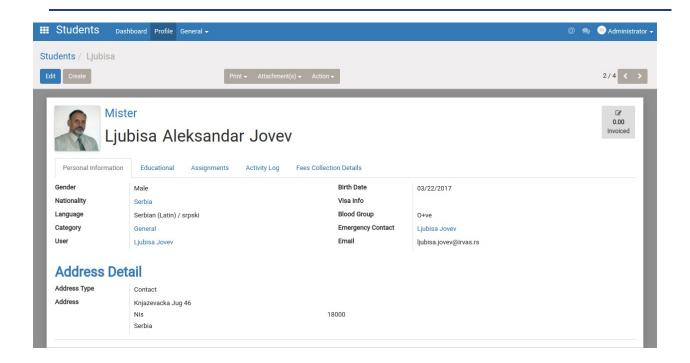


Faculties is the module intended for teaching staff and their activities.



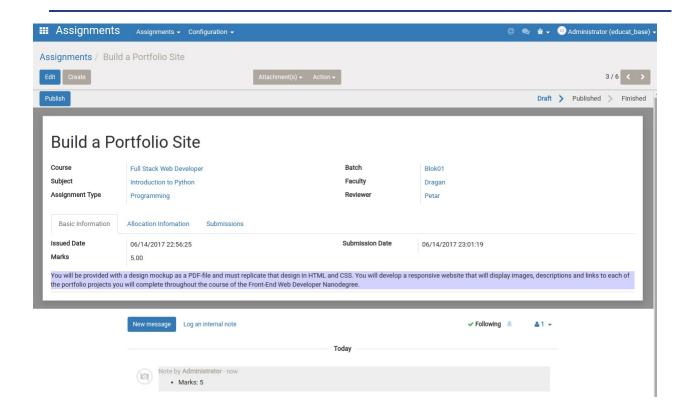
Students is a module for managing tasks that a student needs to do during a program attendance. The module enables the definition of tasks, their publication and acceptance of student's works.



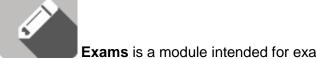


Assignments is a module for the management of assignments a student has to complete during the program attendance. The module allows defining assignments, their publication and acceptance of student works..





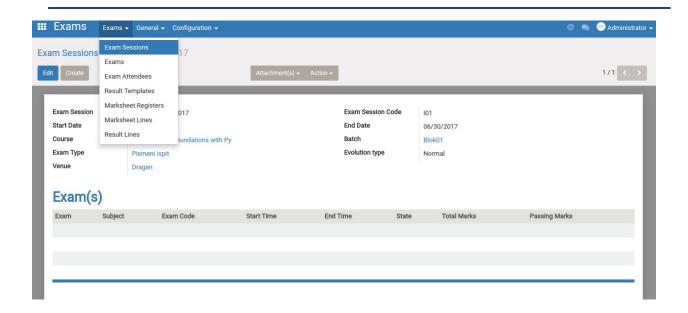
Accounting is an optional module that can be used to register scholarships and their bookkeeping. It can also be directly linked to the online payment system if the HE institution introduces such payment method.



Exams is a module intended for exam planning and recording of results.

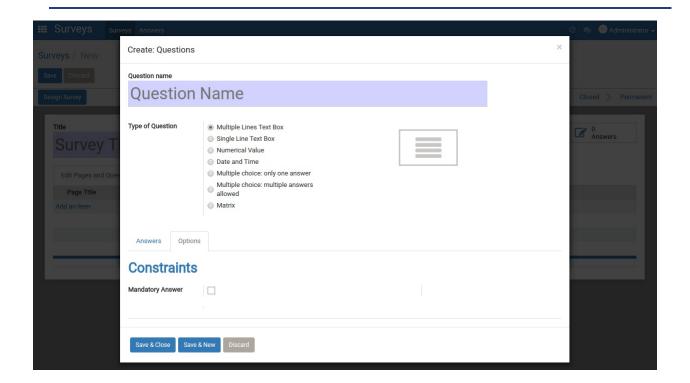






Surveys is a module that provides data for the analysis of the program's quality. It enables the creation of ad hoc questionnaires, their forwarding to student's personal pages, and the analysis of the answers.



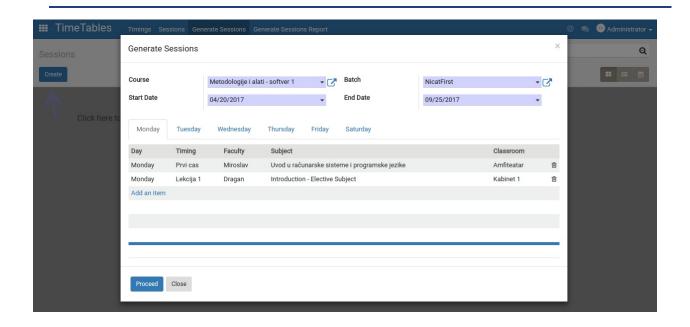


Employees is a module for staff management within a HE institution. It can be used independently or in conjunction with an existing HR module in the HE institution.

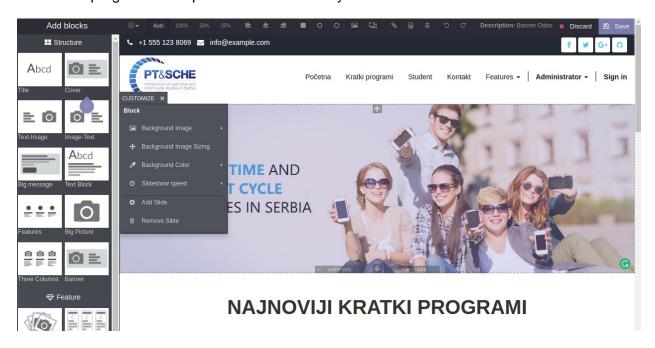
TimeTables is an optional module that defines class scheduling. It can be used for Blended learning.







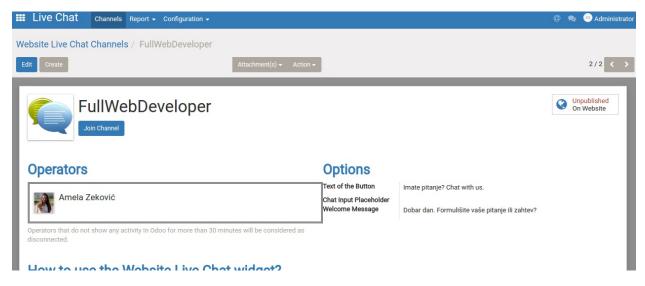
Website is actually a CMS system for updating the public Web site of the PT&SCHE program. It is a powerful editor for easy maintenance of the web content.







Live Chat is a module for creating and managing information from chat rooms. The following image shows how to configure a chat channel. When an operator joins a channel, an appropriate message appears on the student's page and the student can enter into direct communication with the operator.









4.2 Public Web Site for SCHE&PTE programs

Public website for PT&SCHE programs is an informative, responsive website, the primary purpose of which is to provide potential students with information about available programs and terms and conditions for PT&SCHE.

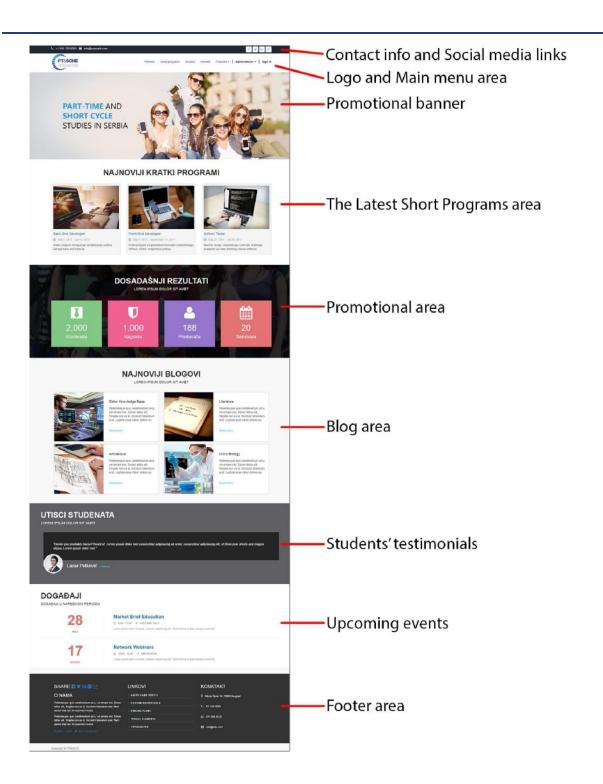
Website is visually divided into several sections:

- Top horizontal area with contact info and social media links
- Horizontal menu area with logo
- Central section for showing page content
- Footer area

In the central section of the homepage visitors can see the latest short programs announcements, as well as some other informative and promotional areas, as it is shown on the screenshot below.



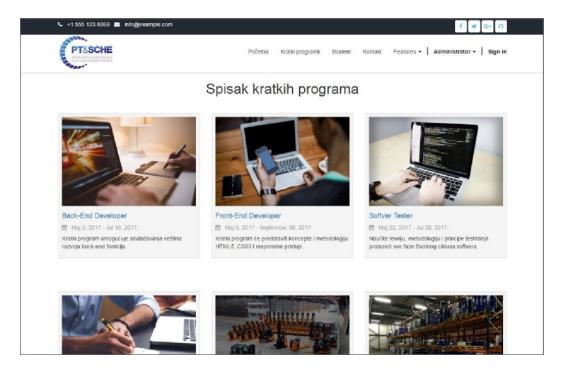








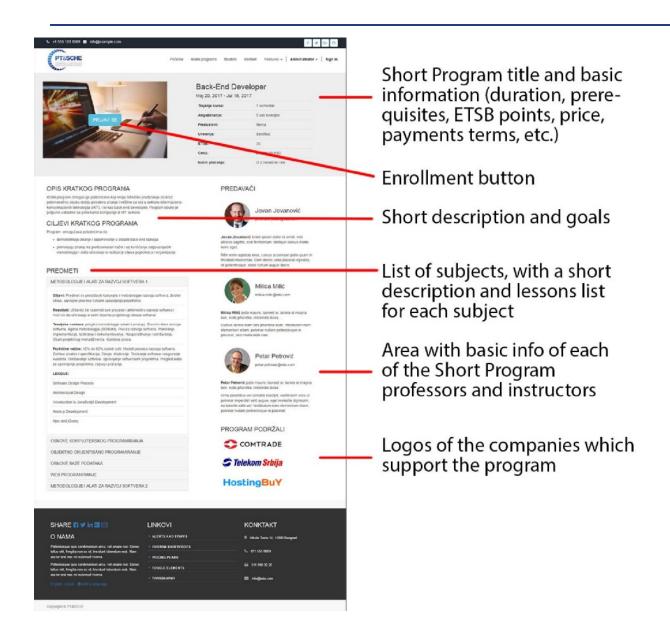
Another important informative page is the Short Programs List page, with the list and short description of all available PT&SCHE programs.



Visitor can select a desired program and see all available information regarding the program. A typical page with a short program details has the following areas:



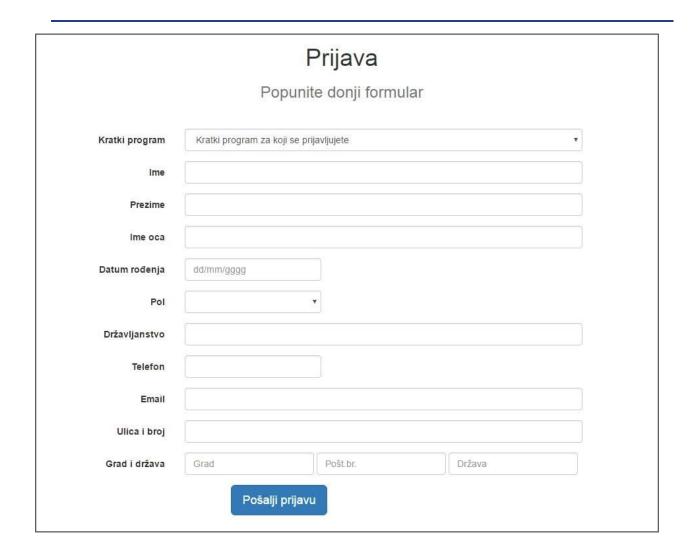




After clicking on the enrollment button, the following application form is displayed:





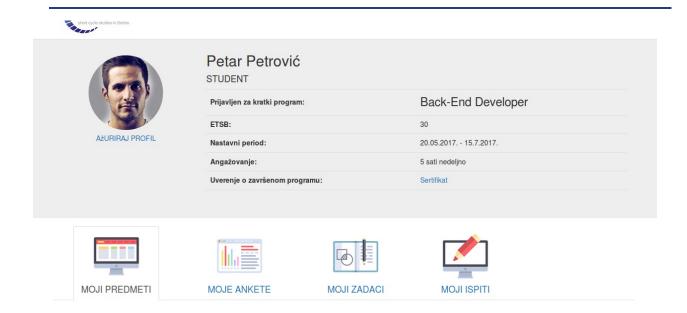


4.3 Portal for Registered Students

The Student Portal is conceived as a personalized single place where a student has access to all the information and activities he/she performs in the learning process.

Below is an example of such a page:





MOJI PREDMETI

METODOLOGIJE I ALATI ZA RAZVOJ SOFTVERA 1	SWMTD1 ETS 10 Obavezni ⊋ FORUM
OSNOVE KOMPJUTERSKOG PROGRAMIRANJA	COMPROG ETS5 (zborni) № FORUM
OBJEKTNO ORIJENTISANO PROGRAMIRANJE	OOP (ETS 5 Obavezni) № FORUM
OSNOVE BAZE PODATAKA	DBASIC (ETS 5 Obavezni) № FORUM
WEB PROGRAMIRANJE	WEBPRO ETS 5 Izborni FORUM

All relevant database data from the back-end are automatically populated and displayed in a clear way to a student, who can, using intuitive navigation, access the content or undertake specific activities.

The following screenshots show sections of student's personalized pages related to the learning content:













MOJE ANKETE

MOJI ZADACI

MOJI ISPI

MOJI PREDMETI

AZIV LEKCIJE	TIP	AKTIVNA OD	AKTIVNA DO	KOMPLETIRANOST %
Software Design Process •	D	20.05.2017.	10.6.2017.	
Architectural Design •	<i>\$\overline{\psi}</i>	20.05.2017.	15.6.2017.	
Introduction to JavaScript Development ©	ß	25.05.2017.	20.6.2017.	
Node.js Development •		25.05.2017.	25.6.2017.	
Ajax and jQuery ⊙	凸	30.05.2017.	30.6.2017.	









MOJI PREDMETI

MOJE ANKETE

MOJI ZADACI

MOJI ZADACI

Plan With Exam Management

Exams require careful planning, skillful execution and collaborative effort for successful execution. With the help of the Exam Management module of OpenEduCat, exam handling just became much simpler and powerful.

Pošalji

Set Exam Schedule

The exams are scheduled for a set of students and they are informed as soon as the exam is created. With complete transparency and great information transfer within the OpenEduCat system, students can prepare for the exam way before it gets started.

Poslato

Supports Forms and Fields

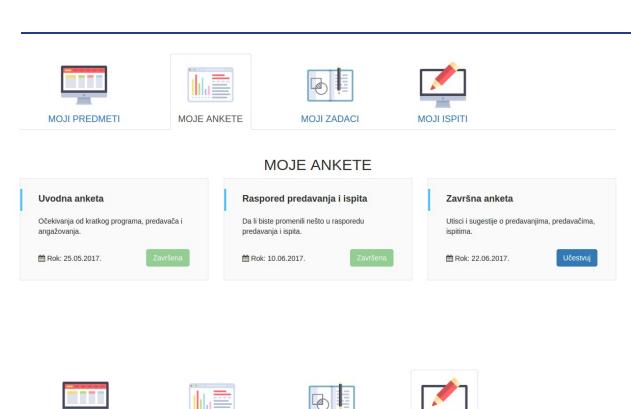
Creating an exam is super-easy. It just takes setting up few fields that are necessary for creating the exam. Exam creation requires time allocation, exam session name, the subject for which the exams needs to be taken.

Posaiji



MOJI PREDMETI





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MOJI ZADACI

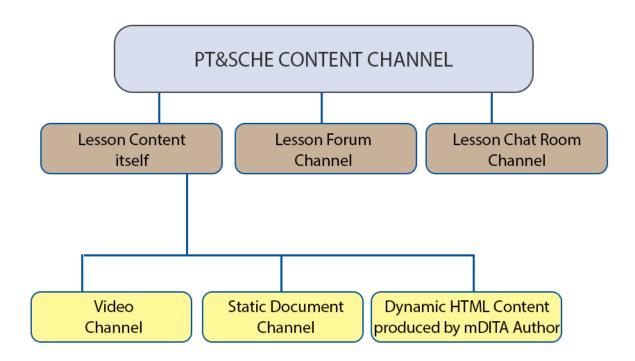
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MOJE ANKETE



For the content delivery of the PT&SCHE program the portal for students uses the channel concept. The following figure depicts this concept in more details.





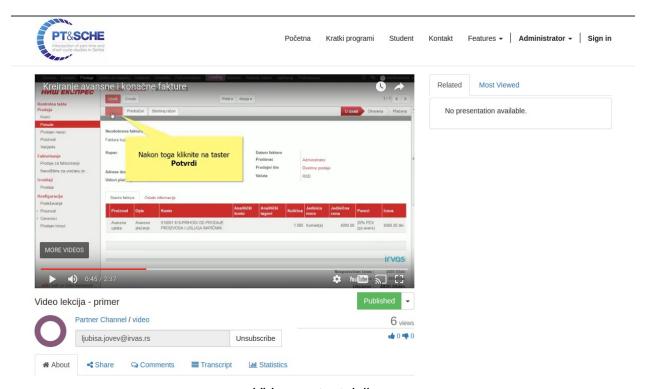
In order this concept could deliver maximum effects, the contents of the PT&SCHE program should be prepared and structured in an appropriate way. The rules for content organization are as follows:

- 1. One PT&SCHE program consists of the following components:
 - a. One or more courses, some of which are mandatory and some elective
 - b. Two or more surveys. One before, and the other at the end of the course
 - c. One or more assignments
 - d. One or more exams.
- 2. Each course consists of one or more Learning Objects in the form of lessons, which can be prepared as video material, a static document (Pdf or PPT) or a Dynamic XHTML document (LAMS seq.) which can contain links to other multimedia content generated by mDITA authoring Tool.
- 3. Each course has its own Forum for collaboration with other students on that course and teaching staff.
- 4. Each course has its own Chat Room for scheduled online consultation with the teaching staff.





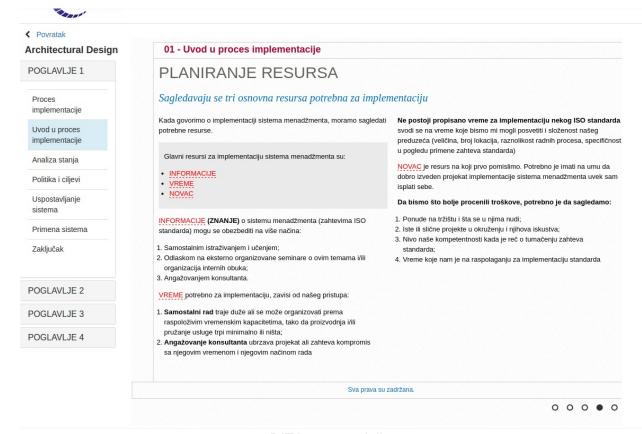
The screenshots below show the screens of the learning content delivery:



Video content delivery

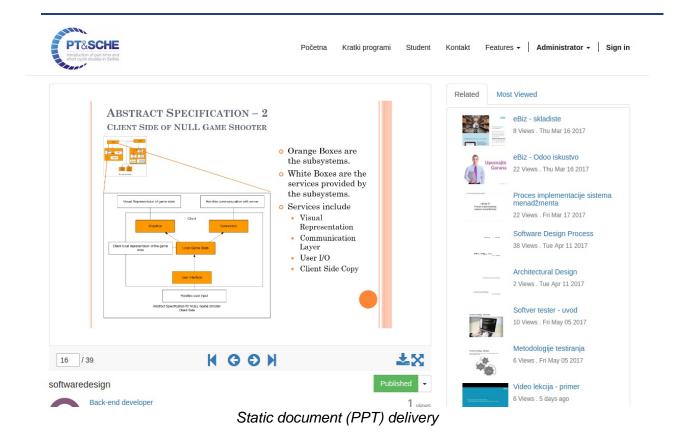






mDITA content delivery

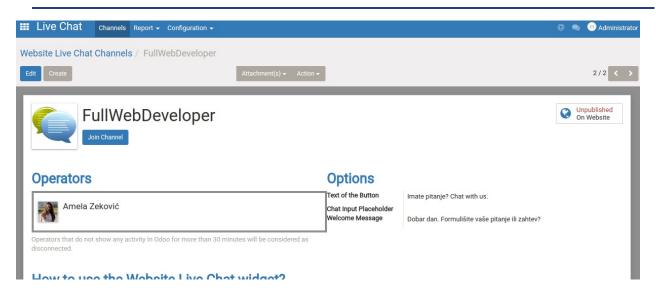




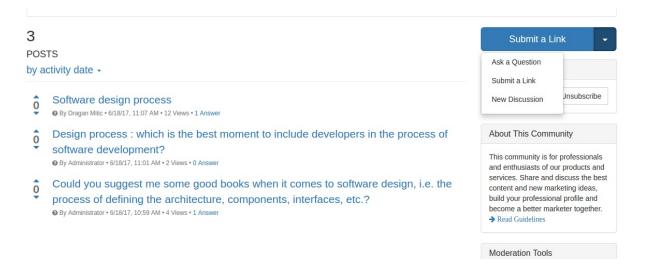
For the purpose of collaboration of students and professors within a single subject, channels for Forum and Live Chat are provided.

Student forum activities can be optionally further evaluated. The implemented forum supports the KARMA principle of awarding points. The following screenshots show the details of these functions.





Administration of the Live Chat channel



Forum page for one of the subjects

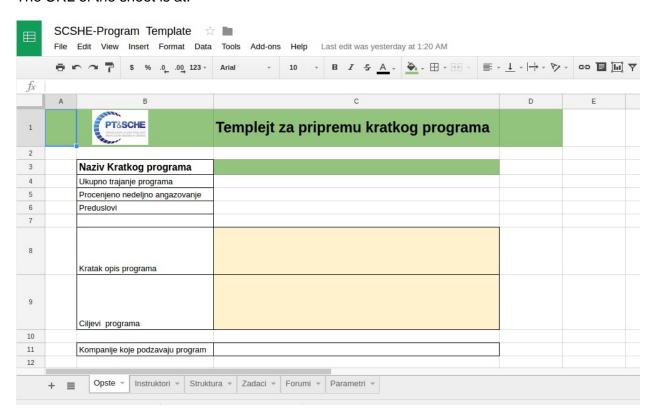




5. Template for SCHE Program content preparation

As a helpful tool in the preparation phase of the learning content for the program, a google sheet was prepared. Using this sheet the staff involved in the content preparation will be able to administer the program structure more easily.

The URL of the sheet is at:



The template contains 5 separate sections for entering details about the program, such as the name, objectives, information on instructors, lessons, assignments and forum.





6. Conclusion

Based on the requirements and conclusions of the document for the selection of LMS platform, Odoo is selected as the platform of choice.

Odoo is built upon a Model-View-Controller (MVC) architecture, and is formed from three main components:

- PostgreSQL database server
- Odoo application server
- Web client

A global vision of the architecture of the eLearning platform contains 3 interconnected units:

- Odoo platform itself
- Beckend application for PT@SCHE program administration
- Students Portal

The student portal is realized as a standard website, and it enables easy connection to the existing web site of a HE institution.

This architecture should provide the automation of the complete education process within PT&SCHE program.