Erasmus+

National Agency for European
Educational Programmes and Mobility

**Innovative Strategic Partnership
for European Higher Education**

ISPEHE

Business Education Public Integration platform
(BEP platform)-ver. 1

Participating organizations

IBI
INTEGRATED
BUSINESS
INSTITUTE

eka
EKONOMIKAS UN KULTŪRAS
AUGSTSKOLA

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BEP Version 1

The BEP software platform represents a modern and easy way to use project management system, suitable for common business, educational or research projects. We have reached our goal to develop a cutting-edge technology platform which can be used by different target groups and stakeholders, such as academic institutions, private enterprises or government organizations. This collaborative web application is publicly available at https://bep.ispehe.org, as it was developed throughout the project. Through the BEP web application, users will be grouped into organizations. Each user can start a project. Other users or organizations can join and contribute. The whole project is managed through the platform.

Before the deployment phase of the first version, a research for usability of online project management systems was conducted and as a result, the project team chose the open source project management system which is the foundation for BEP – Redmine. Redmine was installed on Debian GNU/Linux operating system and Apache 2.4 web server. The application server module which runs on top of Apache is Passanger 3. The BEP system runs on top of a database engine MySQL 5.5. It was fully configured with customized skin and new software version control system was implemented, for managing the different software versions, for the upgrades made to the BEP. The list of features supported by BEP version 1 included:

- Online web application with intuitive web interface.

- Each project should traverse through six stages: Project initiative, Project approved, Project in progress, Project blocked, Project closed.

- Activities, Issues, Gantt chart, Document management.

- Other users can view the new projects on the website.

- Once logged in, users can apply for participating in the project.

- Project manager decides do take the project into APPROVED.

- Project manager assigns tasks and monitors activities.

- Shared results and documents are published.

- Projects can be public or private.

The BEP software platform is an online application with frontend and backend components. The backend and frontend component should communicate through REST API. Therefore, work-flow and sequential diagrams were developed for the software and the programming of the backend features was started in the programming language Ruby, using the Rails framework. The development

of the frontend system followed the finishing of the API functions and modules on the backend. The following new modules were developed for full delivery of the first version: application, custom_project, costs and update_status. These plugins are documented within the source code of the system.

After the delivery of the BEP application for version 1, the important configuration part was performed by the project team, creating more than 50 custom fields, project-type templates and customizing the default work-flows of the Redmine task management system. When the final version of the application was published, quality assurance testing of the system was performed for identifying weak points and to improve the security on the system. The quality assurance testing was throughout and involved multiple approaches: web browser compatibility and testing, content proofreading, links and styles validation. Security, form and accessibility validation was also performed. Finally, security stress test was performed, with a number of open source tools, including apache-benchmark, nikto, nmap, openvas, etc.

The BEP platform can be very useful for managing documents, related to the particular projects. Documents can be tracked in several ways:

- By entering text in the updates of the issues, when logging time or costs.

- Attaching documents in the Documents tab. For each project there is a separate document database, segmented on behalf of document categories.

- Attaching files. Apart from categorized documents, for each project raw files can be attached, such as software packages, archives, certificates, document packages and other project data.

- Wiki pages. Wiki methodology enables easy change, customization and adjustment of the information for a simplified web access. Wiki formatting is very easy and straightforward, with possibility that modifications are made inline.

In the final stages of delivering BEP version 1, the user manuals for the platform, in 5 languages (English, Macedonian, Latvian, Slovenian and Italian) were created.

Since BEP version 2 was planned to introduce a new mobile-friendly web interface, during the final stages of delivering version 1, the screens for the frontend application were designed by the project team. In the second version, this design which was exported in a form of Photoshop files, was converted into HTML and JavaScript.