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R25 Final eLearning portal

Lifelong
Learning
Programme

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Final eLearning portal

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1. Introduction

Nowadays the access to information is very important to the development of a community and improves significantly their quality of life. Many regions in the world that still do not have any access to the internet. The majority of them are not accessible, sparsely populated or are regions that the installation to provide a normal network access is not economically profitable.

In order to overcome this problem N4C project used Delay-Tolerant Networks (DTN) connectivity, to establish a virtual connection to these regions (http://www.n4c.eu/).

The objective of "eLearning-DTN" project also is to offer the whole knowledge of providing network access to these remote communities in order to provide them with the usual network service, especially when it is not economically viable to construct infrastructures. The project prepared several course modules to present the DTN network and all the necessary knowledge in order to build the network and use it.

The Target audiances of the courses are SMEs, NGOs, schools, teachers, training colleges and whoever needs communication and is interested in using Delay Tolerant Network (DTN).

2. eLearning-DTN Portal

The eLearning-DTN portal will offer all the necessary knowledge to people who need to build a DTN network in their regions or producers who are responsible to introduce these possibilities for communities without network access.

The portal will use the Moodle platform that is an Open Source Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE).

The eLearning-DTn portal will be a helpful bridge between the great technology of DTN, solving the problems of lack of connectivity between End-Users.

The portal presents all the knowledge areas by different courses such as presentations, videos and documents. The Figure 1 represents the main page of the project's portal.

Figure 1 - eLearningDTN portal

3. Details of project's portal

3.1. Registration

Before using the course modules, each user needs to be registered in the system. A new user can do this creating a new account, starting by clicking the button indicated in Figure 2.

Figure 2 – Initiate the registration process

When the registration process starts, the user will be prompted to fill in the registration form, such as the typical username, e-mail and password, as well as some personal information, such as name and location (Figure 3).

Figure 3 – Registration form

When the user submits the registration form, a confirmation screen will indicate to the user to check the e-mail address used for registration (Figure 4).

An email should have been sent to your address at

It contains easy instructions to complete your registration.

If you continue to have difficulty, contact the site administrator.

Continue
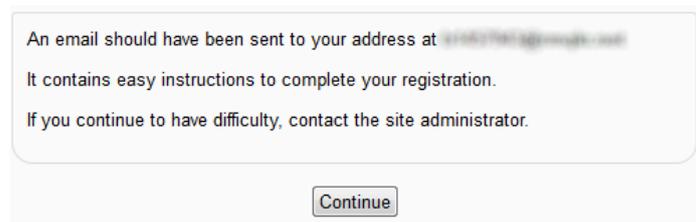
Figure 4 - Confirmation message

After a few minutes, the user will receive a confirmation e-mail with instructions to follow an activation link. The user activates his account after opening the referred linkand the user can start using the platform (Figure 5).

Thanks,

Your registration has been confirmed

Courses

Figure 5 – Account activation confirmation

3.2. Login to the system and course enrollment

Before using the course modules, each user needs to login the system at the login page (Figure 6) and then enrol in the "DTN Course" (Figure 7).
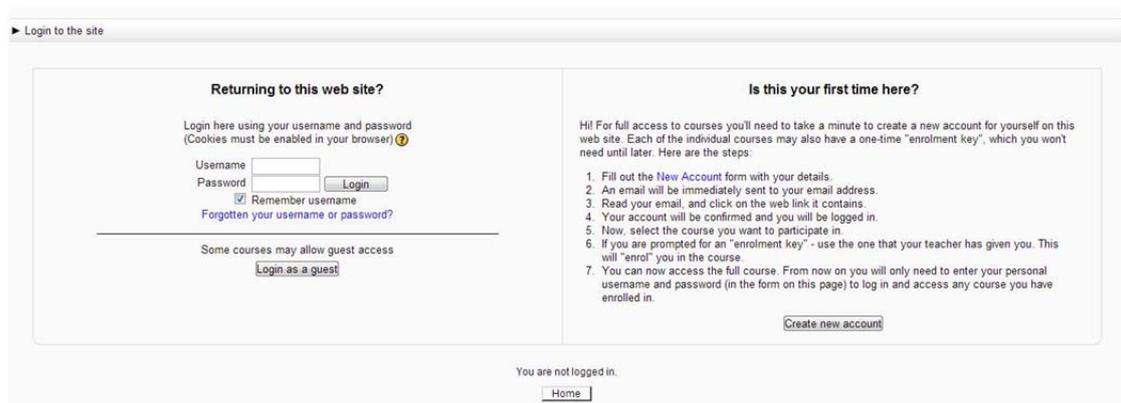
Figure 6 - Login webpage
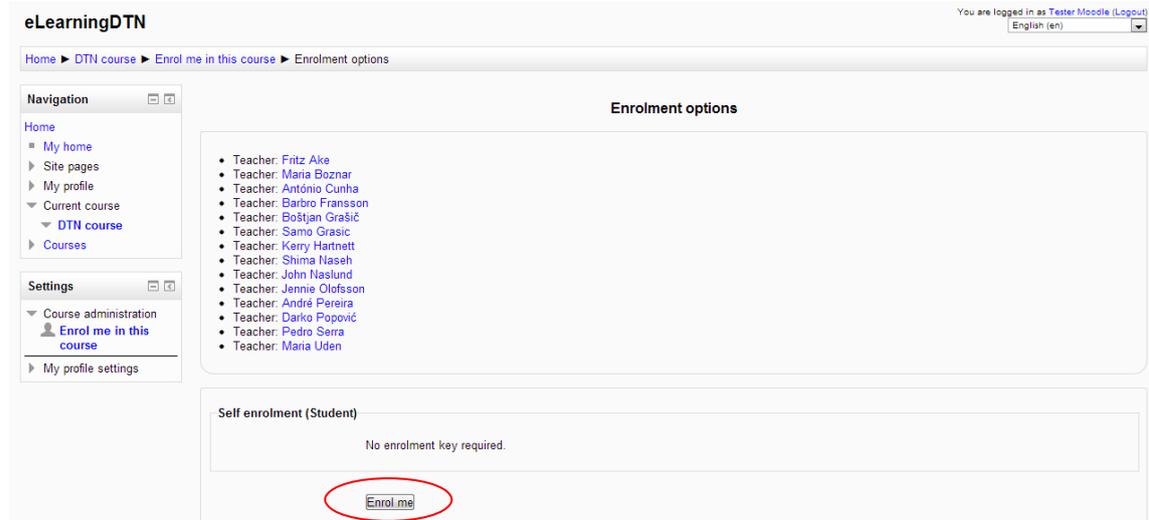
Figure 7 - Course enrollment

3.3. Portal languages

The eLearning-DTN portal is prepared to cover all languages enabling its use in different regions. The user may choose beetwen English, Portuguese, Slovenian, Swedish and Spanish in the top right corner of the page Figure 8.

Figure 8 - Language selection

3.4. Teacher manual

A teacher in the eLearning platform must be able to manage courses by adding new content, which tipically comes in the form of a SCORM package. This package allows lessons to be in html format that can contain videos, slide shows or almost any kind of file in it. The SCORM file should be a **zip file** that contains the information in an **html format** inside.

To make a new SCORM lesson in the course, just **turn editing on**, when logged has a teacher (Figure 9).

Figure 9 – Enabling editing to add new content, when logged in as a teacher

With the editing mode on, new options are now visible, with the **Add an activity or resource** visible on the lower right corner of each lesson (Figure 10).

Figure 10 – Add new content to a lesson

After this is done, just press Save and display at the bottom of the page and the

The user can now select from a list of types of activities (like a SCORM package, Figure 11) or resources (like video or audio files).

Figure 11 – Adding a new SCORM package
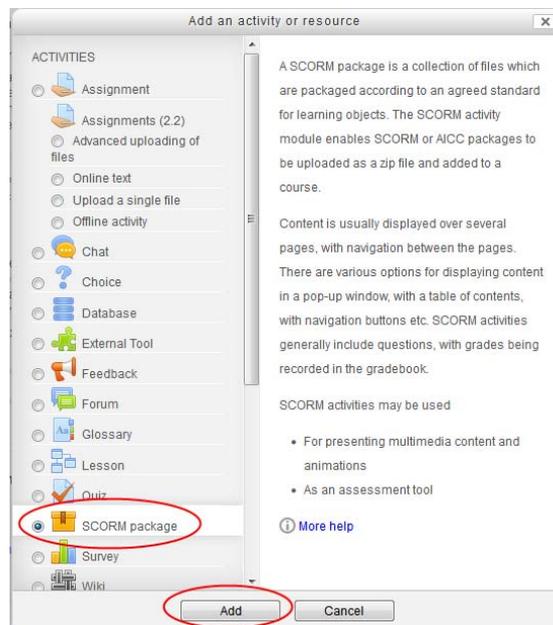
This takes the user to the SCORM package information page, where the user must specifyfurther information, such as package name, description, display and grade settings, besides the file upload location.
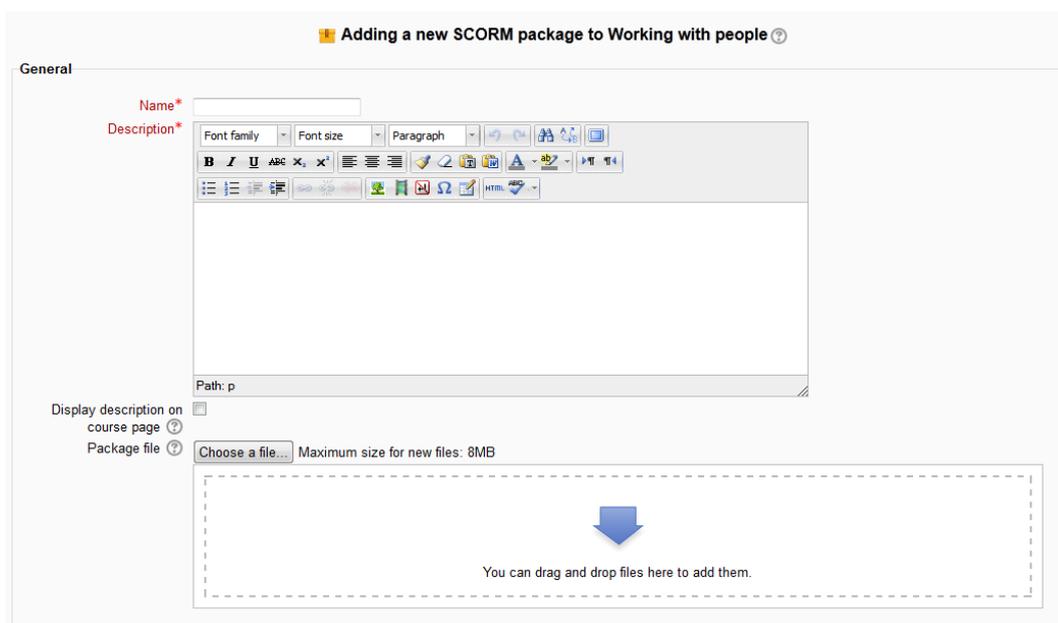
Figure 12 – SCORM package information page

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A similar procedure can be followed to add other types of content, such as files, but results in a different information-editing page (Figure 13).
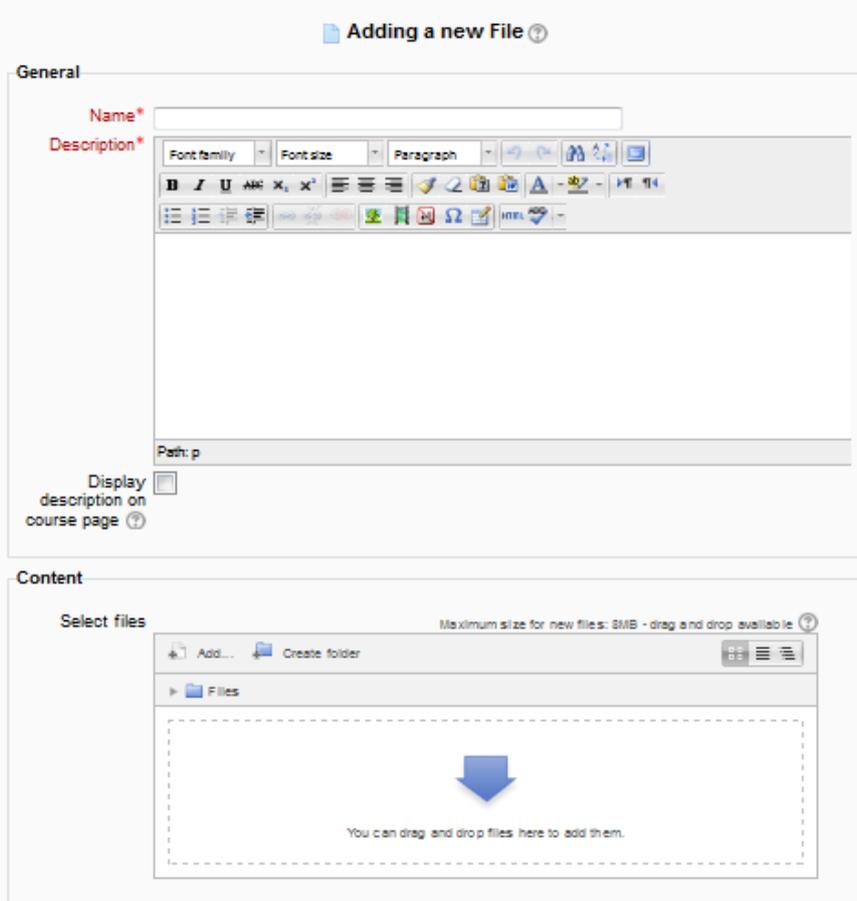
Figure 13 – New file information page

Here, the user must specify some information, such as file name, description and other options, besides the file upload location.

4. Course structures and details

The eLearning DTN project prepared a variety of lectures (as in the available Courses, listed in Table 1) in order to offer all necessary knowledge such as start by the network and build this kind of network access fulfilling all the requirements. These courses will give a brief knowledge of dealing with DTN network to the producers who can be regional companies by the social or environmental goals approach.

Table 1- The course structures of eLearning DTN portal

Module name	Course name
-Introduction	❖ Introduction-Part1 ❖ Introduction-Part2
1-What you need to start	❖ Part 1 : What you need to start ❖ Part 2 : DTN2 configuration
2-How to implement software	❖ Part 1:N4C village router Hardware Assembly instructions ❖ Part 2: Software deployment of DTN2 for TCD deployment in N4C ❖ Part 3: DTN2 Application design for N4C by TCD ❖ Part 4: Gateway server design
3- How to build your network	❖ How to build your network ❖ Installation process ❖ Configuration process
4- Working with people	❖ How to improve the usability of your DTN system ❖ Creating user interfaces for DTN services
5-Case: A deployment to NGO in Swedish Lapland	❖ A Deployment to NGO in Swedish Lapland
6- Case: Environmental deployment	❖ DTN deployment to Postojna karst cave (overall introduction) ❖ DTN deployment to Postojna cave (description) ❖ DTN deployment to Postojna cave (testing) ❖ DTN deployment to testbeds in Slovenia and Sweden within N4C project (overall VIDEO introduction) ❖ Cave station assembly ❖ Cave station maintenance ❖ Cave station disassembly ❖ Meteorological station assembly ❖ Meteorological station disassembly ❖ SymbioNode (use case) ❖ Environmental DTN network ❖ Environmental DTN node ❖ Environmental DTN node assembly ❖ Environmental DTN mules ❖ Environmental DTN gateway
7-PLUTI (Prophet)	❖ PLUTI (Prophet) installation on embedded computer

3.5. Details of the courses

The course consists of 7 modules:

- Introduction – an introduction to delay tolerant networks set in a two-partvideo.
- What you need to start – Here we explain skills, hardware and software required to build a DTN, with hardware types and examples, the software required and how applications can work on a DTN. We also touch on Network design and what considerations you need to take in when designing a DTN network, how to install the software that enables a DTN type of network andconfiguration of a DTN.
- How to impliment software - review a case study on how to implement the software for a DTN network. We will use the example of what Trinity College Dublin (TCD) and Intel combined to implement the reference code of DTN2 in the N4C project.
- How to build your network - People, Mules and Nodes, this topic contain the One.Stop.DTN presentation with an implementation example, also contains the step-by-step guides for the installation and configuration procedures.
- Working with people - material about user interfaces for DTN and material that introduce the basics of Why and How to involve users in your design and development process.
- A Deployment to NGO in Swedish Lapland - This lecture will present the real-world deployment case sceanario in rural area. By following the entire deployment, the user is introduced to the basic DTN principles, deployment planning and main technical requirements. The lecture also discusses the importance of user support and network maintenance.
- Case: Environmental deployment – course for deployment of DTN technology in environmental monitoring (climate, meteorological, karst cave and automatic radiological automatic measuring systems). Automatic environmental measurements are needed also in the communication challenged areas where stand alone automatic measuring stations are placed for climate watch and protection of sparse population.
- PLUTI (Prophet) – Acronym PLUTI stands for Prophet by Lulea University of Technology Implementation and it is used for former "Prophet DTN implementation". In the lessons when names "PLUTI" and "prophet" appear, they are describing the same DTN implementation. This topic contains courses for deployment of this DTN implementation to different computer platforms.