

IT tools & e-learning platform

For ETEROB Project

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Table of contents

1. Introduction	3
2. Rapid e-learning platform	5
3. Managing rapid e-learning project	5
4. Rapid e-learning project cycle	6
5. Development process	7
6. Authoring tools	9
7. MS PowerPoint for rapid e-learning	12
8. Supporting documentation	13

1. Introduction

Choosing appropriate e-learning tools

Decision about choosing an appropriate tools for e-learning program in cost effective manner is often not simple or easy because the decision is usually made by managers who have a little knowledge about information technology or by informatics who are not involve in educational processes directly and know little about educator's requirements and needs. Today various e-learning solutions, especially those based on Internet platform are being used by persons without hard technical knowledge and they need a simple way for identifying various types of tools and evaluating different products which are offered on the market. The problem becomes more and more complicated because of complexity of modern solutions has increased. Several types of e-learning may be used for vocational training and it is important to choose appropriate solution that meets our requirements and needs. Some types of e-learning are listed below:

1. E-coaching;
2. Embedded e-learning;
3. Facilitated e-learning;
4. Instructor-led e-learning and
5. Learner-led e-learning.

The following steps facilitated choosing of appropriate solution and system:

1. Defining and write down learning goals in details.
2. Making decision of what type of mentioned above e-learning model (or their possible hybrid form) will be best for achieve learning goals.
3. Making a preliminary list of hardware and software (institutional and distant users points of view) and list of already possessed hardware and software.
4. Making a list of additional hardware and software that could be needed.
5. Examining the possibility of outsourcing (designing and producing education materials for example).

For our course the learner-led type of e-learning modules has been chosen because of blended learning character of entire course and specific content. (Learner-led e-learning is also called self-paced learning). Course content is usually accessed by typical web browser and it is housed on Web server that enables freely access to the course content via Internet. All instructions for students is provided with main course materials together because there is no real instructor or facilitator who might help students in their endeavors. Also there is often no any mechanisms to allow communication or share knowledge or ideas between students and no time restriction. Example of technology requirements: multimedia and course authoring tools, fast internet connection, server, learning management suite, content management tool.

Rapid e-learning

Rapid e-learning is being used by many large organizations including BP, Ufi, Virgin Media, M&S, HSBC Cable and Wireless and many more. Rapid e-learning is generally defined as Web-based training that can be created in relatively short time and is typically authored by subject matter expert. This technique enables us to design and produce effective courses from a MS PowerPoint materials or separate courses using appropriate tools such as Xerte software from start to finish that does not use preliminary PowerPoint slides. Rapid authoring tools allow us to create sophisticated courses using all types of media. A major distinctive to producing e-learning has been the need to master complex tools or specialist programming languages. A new generation of tools have taken away this barrier and provided either straightforward web-based or windows-based interfaces or even more simple integration with common tools like MS PowerPoint. Rapid e-learning can be effectively used in many different contexts such as just in time learning reinforcement, capturing niche expertise or knowledge protection. It is suitable for frequently updated and time sensitive content. Rapid e-learning is an easy to update platform and it is ideal for training that needs making modifications regularly what is important when we will take into account dynamic changes in technology and entire RES sector conditions.

Benefits and Limitations of the rapid e-learning solution

Benefits: less expensive than traditional courseware tutorials or tools, faster to produce a course (sometimes takes less than 4 weeks); easier to make a future update, easier to run for learners (because it plays in Flash, converted to HTML5 or by using stand alone tool downloaded and installed on learners PC), it may be run on 98% of PC systems), easier to integrate with existing Learning Management Systems (LMS) if you want, may involve an element of virtual classroom delivery or be completely standalone, an important feature is reducing the need for direct intervention from third party on internal learning specialists, may be deployed in a variety of settings which can include standalone, via a learning management system (LMS) or in a virtual classroom setting where it can be supported in a one-to-many distribution model.

Limitations: built-in interactivity is relatively limited compared to traditional authoring tools, built-in audio capabilities are limited usually to one file per screen, interaction between PowerPoint and Rapid e-learning tool is not always seamless.

2. Rapid e-Learning platform

Standard Rapid e-Learning platform involves optional features that enable us to: designing custom content (for instance in PowerPoint), producing and integrating the audiovisual media, publishing (as Flash files, for instance). Good platform also contains optional items such as: additional Flash materials, captivate demos, practice exercises as well as performance assessment, additional characters, video and audio clips

SCORM compliant Flash packages allow to produce browser independent, trackable content without specialist programming assistance. Learning Management Systems such as Moodle or OLAT often create barriers to learning because of their complex structure, extra logs and 'too many clicks' for learners.

3. Managing rapid e-learning project

If the production of "rapid" content comes down to building and distributing content quickly, then there are also a few considerations you need to make about how you manage the development of your "rapid" content. There is no right or wrong approach, only that they need to be judged against the circumstances and the level of risk they expose you to. In some instances that level of risk may be too great, and too disruptive to your wider learning technologies strategy, for you to want to use them. In other instances there may not be another choice. In the simplest view there are three ways to manage "rapid" development: (1) managed; (2) facilitated and (3) anarchic, according to *Elearnity Limited*.

In a managed approach education and design team have a controlling and specific responsibility to produce and launch the entire course content. Project manager maintains the project controls and oversee all aspects of all deliverables, co-ordinates and controls the process of producing every slide and how it is structured.

In case of facilitated approach project manager works with the subject matter experts to enable them to create some useful content. Subject matter experts do up to 70% of the real work and project manager guides and supports a quality outcome. Experts should be provided with frameworks, templates and clear documentation that guide their efforts and make their work much easier and standardized.

In an anarchic approach generic tools are used to enable anyone to create the materials they want without strong controls to manage their outputs. The main risk is lower content quality. Wikipedia is a good example of an anarchic system and is considered as 'open' authoring solution.

Each style of rapid e-learning project management has a certain risk level. As control decreases the number of things can go wrong start to increase and amount of work for management of risk also increases. We can distinguish three types of risk:

1. Technical (refers to the compatibility of content and materials to IT infrastructures and content delivery platforms;

2. Instructional (refers to instructional design that could not be effective);
3. Content (refers to the content inaccuracy).

In case of managed approach mentioned above risks are relatively low. In a facilitated approach technical risk can be low while instructional risk may be higher because of less experienced subject matter expert. In anarchic approach there is a potential that there is a little technical compatibility, no instructional design and content could be misinformation.

A serious management issue for rapid content development is the management of the quality and consistency of the products (learning modules). This includes the quality and consistency of instructional design, assessment, interface, graphical design as well as navigation between slides and course elements.

For the ETEROB Project the managed approach has been chosen.

4. Rapid e-learning project cycle

The phases of rapid e-learning project are almost the same as that for traditional course development. We can distinguish six stages of any e-learning project cycle: scoping, design, development, testing, deployment and maintenance. The rapid approach looks at how each stage can be more efficiently managed and attempts to eventually merge some of them. The most important aim of rapid approach is to move from the traditional production cycle (more than 10 weeks) down to not longer than 3 – 5 weeks. Typical process for developing a traditional course includes seven or more stages (project request, initiation, design, content scripting, development, implementation, closure and evaluation. In the rapid approach design, scripting and development are often merged into one stage. The scoping stage includes the following tasks: definition, resource requirements and content gathering as well as audience analysis.

Definition refers to necessity of having a clear project statement explaining the core dimensions and desired outcomes. In the next stage, resource and content gathering, the content needs to be gathered, packaged and a draft structure of what should be covered must be defined clearly. It is important to define what is the benefit for the learners, what is the logical flow of the content in terms of the appropriate sequence of modules and learning units and their focus, what is the core scenario, what stories are most indicative?

The goal of rapid development cycle is to produce the content as quickly as possible. This means the adoption of iterative development and continuous sign off. The creation of graphics and rich assets are slightly lagged in their delivery, they are produced in a stepped parallel to the instructional design work, filling draft images and mock-ups with real images and interactions. In the traditional e-learning script, graphical assets are referenced in scripting document with their image filename. They are not visible in the development process. While in the rapid development they are appear sooner and in graphical form as a part of the accelerated graphics process. They are also more generic and less fully customized to speed up the process. With a wide range of royalty free graphics resources available, worrying about the use of stock images is not normally a big deal. In a digital age, the ability of rapidly acquire good enough images of bespoke products or environments is equally simple.

5. Development process

Rapid e-learning design is different from traditional e-learning. The comparison is shown in table below:

Traditional e-learning	Rapid e-learning
<p>Design is proceeded with a protracted scoping and needs analysis process which may take several weeks.</p> <p>Design usually starts with a blank page and it's difficult to define what's in/out of scope.</p> <p>Design discussions are vague as it's hard to describe in the abstract; clients often don't know what they're getting until they get it.</p>	<p>Scoping and needs analysis are kept focused and structured using tools and templates.</p> <p>Design starts with a set of structures and patterns, and is grounded in what's possible to avoid open-ended iterations.</p> <p>Design discussions are very specific, based on the interactions tools will handle.</p>

Source: *How to design Rapid e-learning*, Kineo.com, 2008

Creating new course we may assume that presentation of slides will be changed every 45 seconds, so one hour course includes 80 slides. The content could include:

- screen text,
- voice over narration script,
- native graphics (auto shapes, clip art, diagrams, etc.),
- native animations (motion, highlights, hyperlinks, etc.),
- graphics descriptions, placeholders (name or word refers to objects),
- Flash animations and placeholders,
- practice exercises and post test items,
- audio clips (up to 30 seconds per screen),
- Flash animations (for example, 4 Flash files per course hour),
- video clips (up to 30 seconds per screen),
- stock graphics or photos.

30-minute Rapid e-Learning course usually takes 5 to 6 weeks of work and with review cycles the entire process could take 7 to 8 weeks. Example of development process is shown in table below:

Action	Time
<i>Project initiation</i> : define requirements and overall project objectives, generate project plan, project timeline, resources and scope. Create and review of project plan.	1 week
<i>Alpha stage</i> : instructional designer works to define and refine base content and leads to so called alpha release. During the same time appropriate graphics are created. Time depends on complexity of the course. (alpha release is typically made in PowerPoint, it contains all the screen text and audio scripts (if necessary).	2 weeks
<i>Beta stage</i> : after having approved alpha release, work on	2 weeks

<p>multimedia and other contents started. Audio, graphics, video and Flash elements are integrated into the course content. The course is tested and debugged and finally is subject for reviewing. Review cycles can add 1 or more weeks to the beta stage. (beta release incorporates changes in the alpha review. It is complete version of the course).</p>	
<p><i>Commercialization stage:</i> ready to use course is launched and accessible for audience/users. It incorporates all changes made in beta release.</p>	<p>1 week</p>

For Rapid e-Learning to be effective (not only in the simple form of annotated presentation) we should use some instructional design principles:

1. *Effective information design:* present information in digestible sections, use embedded supporting documents (if necessary), place overview before moving to details.
2. *Clear information flow:* explain linkages between individual sections and learning points.
3. *Effective questioning:* use reflective or formative questioning to question every each knowledge section.
4. *Exemplification:* use examples or case studies to illustrate important problems/issues.
5. *Summarization:* summarize key learning at the end of each section.

Rapid e-learning is very closely aligned to the principles of adult learning such as: goal-oriented (the learning will enable them to achieve a specific goal or objective), relevancy-oriented (the task at hand is the most important), practical (focused on what is most useful to them in their work), uses stories.

6. Authoring tools

There are many various authoring software available on the market, both stand alone as fully functional software installed on PC and those accessible via the Internet in the Cloud. Some examples are as follows:

authorPOINT – to capture presentations and use pre-recorded multimedia files in MS PowerPoint. Website provides the easy way to develop multimedia SCORM compliant content and share it across different platforms.

CourseLab – allows users to create, manage and publish online learning content. This is an easy to use powerful authoring tool to create high quality e-learning content in a programming free environment. It is available as freeware version and commercial product.

Scratch – very fun tool allows users to create stories, animations and games and sharing them online.

SmartBuilder – allows its users to become part of an effective interactive learning community. The goal of this website is to empower users to create interactive, custom e-learning content in the easiest way possible.

And some professional but relatively expensive software such as Articulate Studio, Camtasia Studio or Adobe e-Learning Suite. PREZI Professional software enable to produce interesting Prezi Pro displays information not as a series of slides, but as one large board that zooms in on specific information or images. So while Prezi Pro doesn't offer features like slide transitions, object animations, master slides or timed slide progression, it does offer a few features that are comparable. Prezi is useful for relatively small presentations.

Rapid e-Learning authoring tool is a software that allows the non-programmer (subject matter expert, instructor or teacher) to create interactive learning content. Its main functions are to integrate various media (image, sound, video, text, animation) and create interactivities that are required in given learning programme. The important criteria for selecting the right authoring tool for rapid e-learning are as follows:

- how easy and how fast we can learn and master the software?
- what kind of media objects and their formats could be integrated?
- does it have the functionalities that are required in creating e-learning content? Learning content should be designed for self-paced learning and interactivity.
- does it require any programming skills?
- are there limitations or constraints? It is important to choose a tool that provides maximum flexibilities.
- can the final product/course to be deployed in various ways? Common deployment matters are standalone, on the intranet (or Internet) or on a learning management system with SCORM compliance.

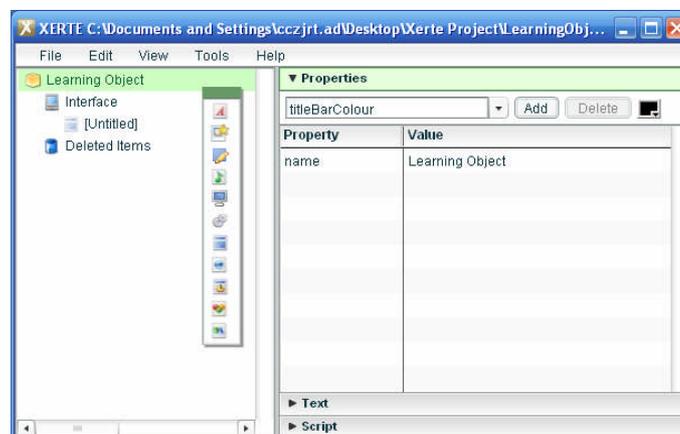
One of the best authoring tools for our project purpose is Xerte Software Suite. This is free set of tools (designed as an open source e-learning project). The Xerte Project provides a full suite of open source tools for e-learning developers and content authors producing

interactive learning materials. Xerte is a fully-featured e-learning development environment for creating rich interactivity. Xerte is aimed at developers of interactive content who will create sophisticated content with some scripting, and Xerte can be used to extend the capabilities of Xerte Online Toolkits with new tools for content authors.

Xerte provides a visual, icon-based authoring environment that allows learning objects to be easily created with the minimum of scripting. Functionality that would be time-consuming to develop from scratch in other tools can be created very quickly in Xerte. You can produce content with Xerte without doing any programming, but there are limitations as to how far you can go. By learning a little scripting, you become empowered to create exactly what you want. Scripting is not difficult, and the scripting language in Xerte is deliberately simple and easy to get to know as it is based on Flash's ActionScript and JavaScript. In fact, Xerte is a great place to start to learn some scripting as you will be able to apply your new skills to other languages that use the same syntax as Xerte.

Xerte really comes alive when you use it in conjunction with Flash. Xerte can take care of the authoring tasks, whilst Flash can be used to create animations, interactivity, custom buttons and interface elements, video and all the other things that Flash is good at. Flash-based content is easily integrated with Xerte. The icons that you add to the document tree allow complex structures of content and sophisticated interactivity to be developed very quickly. As you add icons to the piece it is a good idea to give them a name, so you can find icons in the tree easily later. This becomes very important as your piece becomes more complex. To publish a project, simply select 'publish' from the file menu. All the files you need to deploy to the web server are created for you. Now we should test the learning object and upload the files to a server, creating a link to rloObject.htm. You can change the name of rloObject.htm to something more suitable for your project. To create a SCORM compliant content package, choose 'Package' from the file menu and then select the version of SCORM you want to comply with. Most LMS systems and VLEs support SCORM 1.2. You will be prompted to save the zip file. Xerte creates all the files required for the packaging, places them in the Project folder, and then zips the project folder into the zip file. You can then upload that file into any SCORM-compliant system, such as WebCT, Dokeos or Moodle.

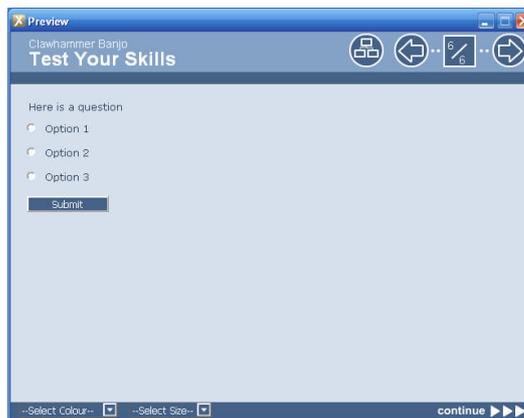
Xerte working interface



Sample of course screen



Test screen



Quiz screen



7. MS PowerPoint for rapid e-learning

MS PowerPoint is well-known as a presentation tool but only few people know that PowerPoint can be used as a powerful e-learning authoring tool. It allows to create true interactive courses. The basic elements to create interactive content is called 'triggers'. A trigger is a click on a given object, text or image, which will start the animation of another object. Thanks to this functionality we can create any kind of interaction like navigation between slides or asking questions.

PowerPoint has got several strong points over other e-learning authoring tools (extended features for shaping and formatting objects, shadows, mirror effects, fill colors, see-through colors, layers, for example). No need for another complex imaging tools. PowerPoint is the only authoring tool which can produce hot-spots in any shape we want. With a PowerPoint converter like iSpring, ReadyGo, Rapid Intake or recently launched MS OfficeMix the course developed with PowerPoint can be run on any platform, including smartphones or tablets via the Internet retaining full functionality.

8. Supporting documentation

Document	Description
The e-Learning Handbook	Carliner S., Shank P. John Wiley & Sons, 2008
Rapid e-Learning	Tutorial written by effectPerformance, information pack
Insider' guide	Becoming a rapid e-learning professional by Tom Kuhlmann
Rapid e-Learning	White paper by Kineo
Rapid e-learning core insights	Elearnity Limited 2008
Getting started with Xerte	Manual, J. Tenney 2007