Projects and Products Portal for Leonardo da Vinci

3DWEB BASED LEARNING AND TRAINING IN THE FIELD OF THE ENTERPISES PRODUCT LIFECYCLE

LLP-LDV/TOI/2007/IT/166

http://www.adam-europe.eu/adam/project/view.htm?prj=4449

Project Information

Title:	3DWEB BASED LEARNING AND TRAINING IN THE FIELD OF THE ENTERPISES PRODUCT LIFECYCLE
Project Number:	LLP-LDV/TOI/2007/IT/166
Year:	2007
Project Type:	Transfer of Innovation
Status:	running
Country:	IT-Italy
Marketing Text:	Lack of some professional figures - skill shortage - had been found inside the European Union in some main economic sectors of the mechanical industry. The objective is highly the training of qualified professional figures able to exploit the new technologies of product development and to share the information to all the participants of the project (industry personnel, codesigner, suppliers…) also overcoming the geographical barriers. Unfortunately the formative activity in these sectors implies expensive direct and frontal formative methodologies, with the use of equipments, computer technologies, tools, experiences of laboratory hardly replaceable with the techniques of distance teaching. Therefore, the necessity to facilitate the innovation of the enterprises with new tools of training to organize the knowledges, to share the "best practices" and to facilitate the transfer of the information.
Summary:	Manufacturing market have become today complex and globalized, where product life is rapidly decreasing, product structure is more frequently changed and customer-oriented: manufacturers have to develop and produce more complex products in less time while still competing in global markets. In addition, the 20th century technological developments have transformed the majority of wealth-creating work from physically-based to “knowledge-based”. Technology and knowledge are now the key factors of production. The latest developments in the net infrastructure, guaranteed by the actual anti digital divide efforts implemented all over the world, has increased the information, knowledge and expertise mobility, that could be transported instantaneously around the world. To meet these challenges it is necessary to improve the design culture providing more innovative design methodologies and tools based on 3D technologies (that guarantee powerful and flexible platform for collaboration and communication disjoined by any geographical constraints), together with the appropriate knowledge for the technicians and engineering involved in the product development. More than this, considering that the building of designer skills requires laboratory and workshop practice, difficultly provided to young people, elderly, disabled by traditional learning infrastructures in the European community, it is necessary to supply this unsatisfied demand of qualifying lifelong learning and training by the means of new tools and technologies based on 3D Web Technologies. In order to overcome this difficulty, the previous Leonardo WEBD project (Web-based learning and training engineering biomedical design) proposed distance learning and training for high skill professional profiles using interactive 3D graphic and Web3D virtual reality tools and has introduced and promoted, for the first time in Europe, the third dimension in the distance learning. The new Leonardo Multilateral Projects ‘Transfer of Innovation’ 3D Web-based learning and training in the field of the Enterprise Product Lifecycle (3DWebEPL) has the aim to transfer and to adapt the 3D innovative content and results from previous Leonardo WEBD project to improve SME vocational training system, promoting an efficient collaboration network over product development, focusing its attention on tools for sharing information and knowledge in various company divisions. The final product of the project will be a web platform for distance learning, based on 3D web technologies and usable by all the possible users on the European territory. Through the presence of modules oriented to the mechanical field a solid competence about CAD/CAE/CAM/Mock-up/PLMs techniques will be provided to SME employees, facilitating their collaboration in the development of new more complex and competitive products. The previous experience developed with the partners coming from the different

Project Information

countries of the European community, such as Romania, proves its engagement to supply this tool also in those countries (as Turkey) that need innovation in the technologies of product development in order to make them more competitive in the global economy.
The main impact of the project will mainly concern high proficiency technicians training able to employ the new technologies for the product development, sharing the enterprise knowledge within the actors engaged in the design team.

Description: The project has the ambitious objective to realize a continuous training of technicians and planners of the industrial sector, for having a flexible, formative, powerful tool for the enterprises (above all the small and medium sized enterprises, SMEs).
The project exploites new hardware and software potentialities, uniting the competences and the experiences of the partners, universities and industrial structures. Its objective is to transfer on the net a distance formative product developed in the previous project WEBD and based on the new educational technologies that uses the third dimension.
Also in a distance formative activity, the simulation and the reproduction of situations and virtual sceneries has the objective to conduct the young people to acquire creative planning ability in the main sectors of the European economy, like the industrial mechanics.
The project is conforming to the priority 3 of the program Leonardo Da Vinci that proposes to promote the abilities and the competences of the personnel of the enterprises and the young people that want to undertake the formative iter of the industrial engineering. It also proposes to improve the quality and the access to the professional continuous training as well as capacity building and life long learning skills

Themes: *** Lifelong learning
*** Enterprise, SME
*** Continuous training

Sectors: *** Information and Communication

Product Types: teaching material
modules
website
CD-ROM
material for open learning
evaluation methods

Product information: Starting from the precedent project WEBD, the project 3DWebEPL propose a tool and an innovative training method based on an advanced net technology of visualization and interaction (denominated Web3D): that method allow the groups recipients to travel inside a virtual environment and to manipulate, to move and to interact with cars, tools, utensils and models of the real world.
It means to simulate and also to reproduce in a distance training activity situations and virtual sceneries so that to conduct the personnel of the enterprises to acquire planning creative abilities within the most important sectors of the European economy, as the industrial mechanics.
For the modern industries the knowledge is the integral part of the product.
The globalization and the transnational character of the industries underline the necessity of these technologies WEB3D: they can form some qualified professional figures that can exploit the new technologies of development of the product and make them sharing the informations to all the participants to the project (industry personnel,codesigner, suppliers…) also overcoming the geographical barriers.
Considered the interest manifested by some industries for the training modules of the mechanical sector, the project 3DWebEPL aims to transfer the techniques and the tools set in the precedent project to the sector of the development of the industrial product. To reach this objective, the existing training modules will be adapted, integrated, with potentiality and further functions to make the training possible on thematic CAD/CAE. For example, keeping in mind the evolution of the technologies of the last two years, advanced tools of mock-up and mark-up will be added: they enable the assemblage, the measure and the control of the interferences among the

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various components of a product.
The formative forms in English and Italian, will be made available, translated and also suited for the emergent industrial context of Turkey and Romania through the contribution of the partners.

Projecthomepage: http://webd.polito.it/3dwebepl/

Project Contractor

Name:	Politecnico di Torino
City:	turin
Country/Region:	Piemonte
Country:	IT-Italy
Organization Type:	university/Fachhochschule/academy
Homepage:	http://www.polito.it

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Partner

Partner 1

Name: Consorzio Scuola Comunità Impresa (CSCI)
City: Novara
Country/Region: Piemonte
Country: IT-Italy
Organization Type: association/non-governmental organisation
Homepage: http://www.cscinovara.it

Partner 2

Name: Fondazione Novara Sviluppo (FNS)
City: novara
Country/Region: Piemonte
Country: IT-Italy
Organization Type: association/non-governmental organisation
Homepage: http://www.novarasviluppo.it/pub/index.php

Partner 3

Name: Gazi University (GU)
City: Ankara
Country/Region: Ankara
Country: TR-Turkey
Organization Type: National Agency
Homepage: http://www.gazi.edu.tr/

Partner 4

Name: Escuela Tecnica Superior de Ingenieros Industriales
City: Madrid
Country/Region: Comunidad De Madrid
Country: ES-Spain
Organization Type: university/Fachhochschule/academy
Homepage: http://www.industriales.upm.es/

Partner

Partner 5

Name:	The Romanian Inventors Forum (FIR)
City:	Iasi
Country/Region:	Centru
Country:	RO-Romania
Organization Type:	research institution
Homepage:	http://www.afir.org.ro/

Project Files

2008_07_29_stampa.jpg

http://www.adam-europe.eu/prj/4449/prj/2008_07_29_stampa.jpg

Article on National Journal

Articolo-Valencia.pdf

http://www.adam-europe.eu/prj/4449/prj/Articolo-Valencia.pdf

Paper for Ingegraf Conference June 2008, Valencia,Spain

dep.zip

http://www.adam-europe.eu/prj/4449/prj/dep.zip

depliant of project

ingegrafcongress2009.pdf

http://www.adam-europe.eu/prj/4449/prj/ingegrafcongress2009.pdf

21ST INGEGRAF INTERNATIONAL CONGRESS
LUGO-10/11/12 OF JUNE

Pagine da Programa_Congreso_Ingegraf.pdf

http://www.adam-europe.eu/prj/4449/prj/Pagine%20da%20Programa_Congreso_Ingegraf.pdf

Ingegraf Congress: Valencia 4-6 June 2008

paper tunisia.pdf

http://www.adam-europe.eu/prj/4449/prj/paper%20tunisia.pdf

13TH INTERNATIONAL RESEARCH/EXPERT CONFERENCE "TRENDS IN THE DEVELOPMENT OF MACHINERY AND ASSOCIATED TECHNOLOGIES2 TMT 2009, HAMMAMET, TUNISIA, 16-21 OCTOBER 2009

PresentazioneMadrid.ppt

http://www.adam-europe.eu/prj/4449/prj/PresentazioneMadrid.ppt

Technologies presentation

rivista_nazionale.pdf

http://www.adam-europe.eu/prj/4449/prj/rivista_nazionale.pdf

Article on Italian trade journal

turkishtradejournal.pdf

http://www.adam-europe.eu/prj/4449/prj/turkishtradejournal.pdf

turkish trade journal

Volantino_.doc

http://www.adam-europe.eu/prj/4449/prj/Volantino_.doc

LEAFLET OF THE SECOND YEAR OF THE PROJECT

web3dsimulator.pdf

http://www.adam-europe.eu/prj/4449/prj/web3dsimulator.pdf

Products

1 ANALISYS OF THE LACK OF COMPETENCIES

2 INTERACTIVE IMAGES IN 3D DESIGN

Product 'ANALISYS OF THE LACK OF COMPETENCIES'

Title: ANALISYS OF THE LACK OF COMPETENCIES

Product Type: procedure for the analysis and prognosis of the vocational training requirement

Marketing Text:

Description: The analysis shows the results of the Workpackage 1 (Analysis of the lack of competencies) of the Leonardo Multilateral Project Transfer of Innovation “3DWebEPL”, whose objective is the implementation of a web platform for distance learning, based on 3D web technologies and usable to prepare high proficiency technicians in the field of the product development

Target group: partners of the project
final recipients: SME'stechnicians

Result: The results which come out of the survey, give us the possibility to adjust the training intervention as per the following topics:

Biomechanics
Design engineering

Within the course on biomechanics the following subjects will be developed:
• Basic level: What it is biomechanics, CAD, image processing in Biomechanics for biomechanics.
• Advanced level: Prosthesis of hip and Prosthesis of Zygoma.
The subjects developed for the design engineering module will be:
• Basic level: Descriptive geometry, basic Drawing, Drawing of basic sets and CAD.
• Advanced level: dimensional tolerances, geometric and MMP and standardized elements

Area of application:

Homepage:

Product Languages: English

product files

3dwebepl-final report INAN GULER P6.rar

http://www.adam-europe.eu/prj/4449/prd/1/1/3dwebepl-final%20report%20INAN%20GULER%20P6.rar
DISSEMINATION GAZI UNIVERSITY

Product 'INTERACTIVE IMAGES IN 3D DESIGN'

Title: INTERACTIVE IMAGES IN 3D DESIGN

Product Type: teaching material

Marketing Text: A web-based learning and training platform (http://webd.polito.it/3dwebepl) was constructed through a Leonardo da Vinci international project, in the field of the Enterprise Product Lifecycle (EPL). As a multilateral project of transfer of innovation, 3DWebEPL has as main aim to transfer and to adapt the 3D innovative contents and results from a previous Leonardo da Vinci training project called WEBD (www.webd.etsii.upm.es). Platform is oriented to technicians, engineers or people that work in the mechanical industrial sector with at least a high school certification and interested to acquire new competencies and to achieve superior formal credit certifications. The originality of project consists in the interactivity of images in 3D design used on Internet

Description: While unemployment rates remain stubbornly high, the European
Union suffers from what has become a chronic shortage of certain skilled workers, in particular technicians and researchers in the mechanical engineering and computerized mechanical design areas. These are exactly the skills needed by European industry to speed up prototyping of new products, materials and processes. More to the point, they are the kinds of skills European nations must develop within the workforce to maintain a competitive posture with Asia and the Americas in a competitive world market.
A former WEBD international pilot-project (Web based training and learning in the field of engineering and biomedical design, WEBD) deployed through Leonardo da Vinci frame had as main task the development of a platform-independent prototype to describe three-dimensional interactive
Octavian Ciobanu, Stefano Tornincasa, Enrico Vezzetti and Gabriela Ciobanu
virtual worlds linked to the World Wide Web by using Web3D technologies [1, 2, 3, 4, 10].
In vocational training, 3D virtual manuals are superior as the trainee can see tools and objects from every angle, as though they were floating around from any perspective they choose.
The combination of multimedia and virtual reality that characterize the WEBD program will ultimately provide a user-friendly interface to encourage distance learning and foster new and innovative approaches to professional training connected to Enterprise Product Lifecycle (EPL). Another area where the training materials and methods of the WEBD project may be applied is a virtual manual for training of office staff.
Web3D is ideal for distance education for the simple reason that it allows trainees to study realistic images of phenomena and objects and then ask questions to the instructor on line.
Web3D is a term meant to encompass all of the many specific technologies for displaying and representing 3D graphics on Web pages.
Web3D as a term evolved somewhat from VRML, the Virtual Reality Modeling Language, as a way of broadening the scope of technologies used for 3D on the Web. There are different technologies that make the vast variety of Web3D application areas possible. Some of them are proprietary, and some are open
source.
2. The Description of the Web3D Solutions
The final goal of the initial WEBD project was to evaluate the possibilities that offer the Web3D technologies for Internet in the field of the training. The first technology that allowed the 3D interactive worlds visualization through Internet was the standard VRML.
In general, these technologies include several methods that optimise the mesh of the 3D models, obtaining very low rates of downloading. Also streaming and optimised textures are used. The render kernels offer a higher quality to 3D objects made with VRML.
Due to considerable improvements in 3D graphics hardware and fastevolving Internet technologies, the availability of 3D technologies for consumer platforms

Product 'INTERACTIVE IMAGES IN 3D DESIGN'

Description: increases.
In selecting an appropriate technology for the 3D virtual mechanical product, the necessary requirements standards are:
1) Architecture: today all Web3D companies have adopted the same commercial solution. Typically, a player lives on a Web 3D company's server and is accessed through browser plug-ins that must be downloaded and
installed. Players work something like game engines: they put 3D objects or scenes, render the objects in real time and manage interactions.
2) Model quality: accurate representation and high-quality display are fundamental requirements to avoid misinterpretation of the CAD 3d model data.
3) Interaction: a powerful animation and interaction capabilities is a promised benefits of Web3D technology. Some technologies provide texture animators (to allow blending between material states), a simple procedural animator (to allow spins, translates, scales, etc.)
4) Compression: the increasing use of corporate intranets for access to data servers through possibly low-bandwidth communication lines has increased the need for efficient compression schemes to deal with common
types of media. The increase in the use of 3D graphics hardware and of 3D graphics multimedia data type showed the need of new optimization schemes.
Packetization and streamordering of the compressed data is an advanced solution for efficient Web delivery of 3D models.
Traditionally, applications needed to retrieve an entire data file before the user or receiving application could begin to see, access, or work with the data contained therein. This slows down work and can frustrate users.
Streaming applications partially alleviate this issue by enabling access to the data before the entire file is downloaded. In order to maximize the effectiveness of a streaming application, data must be delivered in an order dependant on the user's interaction
5) Programming interface: a developer toolkit includes a comprehensive set of tools that assist in streamlining every stage of the 3D
content deployment cycle, from the creation of optimal 3D content to viewing and interacting on-line.
6) Model creation: many of the current 3D authoring packages can already export Web-capable formats; the models are also created and automatically exported from 3D CAD software.
7) Cost: the commercial strategy is to offer the authoring tools free, and to sell the publish license.
In selecting an appropriate Web3D technology, some software characteristics can be compared and analysed

Target group: technicians and researchers in the mechanical engineering and computerized mechanical design areas

Result:

Area of application:

Homepage:

Product Languages: English

Events

Events

Ingegraf Congress

Date 08.01.2010

Description El diccionario de la Real Academia Española de la Lengua define ingeniería como la "actividad profesional del ingeniero" y como "el estudio y aplicación, por especialistas, de las diversas ramas de la tecnología".
Sin embargo, si se asocia el término no sólo con el estudio y la aplicación sino también con la reflexión y la actividad creadora, se encuentra más ajustada la definición aportada por la Enciclopedia Wikipedia, que se refiere a la ingeniería como "la profesión que aplica conocimientos y experiencias para que mediante diseños, modelos y técnicas se resuelvan problemas que afectan a la humanidad".
Otro concepto que define a la ingeniería es el arte de aplicar los conocimientos científicos a la invención, perfeccionamiento o utilización de la técnica en todas sus determinaciones. Esta aplicación utiliza el ingenio de una manera más pragmática y ágil que el método científico, puesto que generalmente una actividad de ingeniería está limitada al tiempo y recursos dados por el proyecto.
Muy ligado a ello encontramos el tema de la creatividad. Para que ésta sea posible se requieren tres elementos: una persona curiosa que desee explorar el mundo, una voluntad de aprender y un deseo de construir para conseguir algo distinto y mejor. Estas tres características se combinan en ingeniería pero con la obligación de añadir amplias dosis de pragmatismo ya que su proceso práctico esta marcado por plazos y cuotas temporales.
Otro tema consustancial a la ingeniería es el abordar los problemas mediante una formulación
gráfica para la descripción rápida de las ideas. Reiterándome en lo de la creatividad, esta formulación gráfica debe ser entendida no sólo como elemento de comunicación sino, sobre todo, como elemento de creación.
El plano, lo gráfico, sirve para anticipar la acción y para forzar la creatividad. La necesidad de solventar problemas sobre la mesa de dibujo exige soluciones ingeniosas que de otra manera no se nos ocurrirían. Los errores son más fáciles y más económicos de corregir en un plano que en la realidad. Así, diseño y dibujo convergen necesariamente ante problemas complejos.
Varios ejemplos de todo ello ya hechos realidad se dan cita en nuestro Congreso. Las tres conferencias destacadas nos presentan ejemplos de la vanguardia más absoluta de la ingeniería en su formulación gráfica.
En primer lugar, estarán representadas las tecnologías de ingeniería gráfica de base digital que han sido impulsadas de forma exponencial por un conjunto de convergencias tecnológicas cuyos principales ejemplos son visibles en Internet. El éxito del despliegue de los paradigmas gráficos de Google es un ejemplo muy contundente: Google Earth se está transformando en un colosal modelo de un Internet 3D basado en la georeferencia.

Events

Valencia 4 | 5 | 6 de Junio de 2008
20 Congreso Internacional de Ingeniería Gráfica
5
De cómo se desarrolla este paradigma versará la conferencia a cargo de Geovirtual, empresa española y europea que co-lidera la iniciativa e-Globe y a la que se ha sumado el astronauta Pedro Duque.
Las interfaces táctiles son otra faceta de la nueva ingeniería gráfica que nos presentan ahora unos ordenadores que dejan atrás el esquema de la interfaz del PC: ordenadores de interfaz e interactividad luminosa, sin ratón, sin monitor y sin teclado físico. Una muestra de ellos es el genial Audiopad de James Patten que tendremos ocasión de conocer en la conferencia inaugural del Congreso.
A esto hay que sumar la extraordinaria tecnología de ingeniería gráfica creada en Valencia por el excepcional ingeniero Ricardo Montesa cuyo software genera verdaderos universos virtuales de tiempo real, utilizados por las principales cadenas de televisión del mundo (BBC, NBC, Al Jazeera, etc.), por Steven Spielberg en sus películas y por la sede de NASDAC en Manhattan en sus muros gráficos digitales.
Junto al deseo de que los participantes puedan vislumbrar la ingeniería más vanguardista, se han tenido muy en cuenta los objetivos marcados en la reunión de Perugia y en encuentros anteriores. Por ello, también nuestro Congreso se ocupa de la consecución de estas metas: publicación electrónica en CDROM del contenido del congreso completo, actualización y publicación de las mejores comunicaciones en la revista Anales de Ingeniería Gráfica, promoción de la redacción de las comunicaciones en inglés, mayor internacionalización de la composición del Comité Científico, y concesión de un premio y mención especial a los mejores trabajos presentados en el congreso.
Además, queremos seguir debatiendo la manera de integrar de forma racional aún más las herramientas informáticas en la gestión y valoración de las comunicaciones; el disponer de un sitio web único desde el que efectuar la gestión de todos los congresos futuros, tal como se planteó en Perugia; el ampliar más el Comité Científico para que cada revisor evalúe únicamente un máximo de tres comunicaciones; el conseguir referenciar el Congreso para que la publicación en el mismo sea valorada positivamente por las comisiones de evaluación de méritos de investigación; y el cumplir los requisitos para la indexación de la revista Anales de Ingeniería Gráfica.
Por último, desde los comités científico y organizador, agradecemos a los participantes su esfuerzo y les deseamos una estancia productiva e interesante en nuestro Congreso así como una feliz visita a nuestra universidad, la UPV, y nuestra ciudad, Valencia.

Events

Engineers, research groups

Event is open to the public

Fernando Brusola Simón
Ingegraf President

Valencia, Spain, 4/5/6 june 2008

Giornata Nazionale ADM 2008

Date 13.03.2008

Description This edition of the Seminar 'Dall'Idea al Brevetto' has the title “Integrated Planning and simulation for the collaborative development of new industrial products
The seminar is managed by the ing. Giovanni Barbanti, teacher in the Faculty of Engineering of the University in Modena and Reggio Emilia.
The seminar objective is to find a description of a methodology of innovative planning that minimizes the costs and times for the development of new products or for the optimization of existing products covering all the demands(i.e the homologations, the production of mass, the protection of the intellectual ownership).
During the Seminar is organized a new edition of the School Prize 2008 introduced by the prof. Stefano Tornincasa,that illustrates the rule of it clarifying the spirit of the initiative.
The winning Schools of 2007 receive the prizes from SolidWorks (sponsor of the prize) and from ADM. The space reserved to the winning Schools will let teachers and students testing the difficulties and the satisfactions got by job of modeling and group planning.
The afternoon session of the Day foresees for the Partners ADM a visit to the center of the SIMECH laboratory near the firm SIR S.p.A., world leader in the integration of systems and robotic implants.

Target audience Collective Partner ADM
SIMECH - Laboratory of Integrated Planning and Simulation for the High Mechanics of the University of the Studies in Modena and Reggio Emilia, directed by the prof. ing. Angel O. Andrisano.

Public Event is open to the public

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Time and place Bologna, Italy