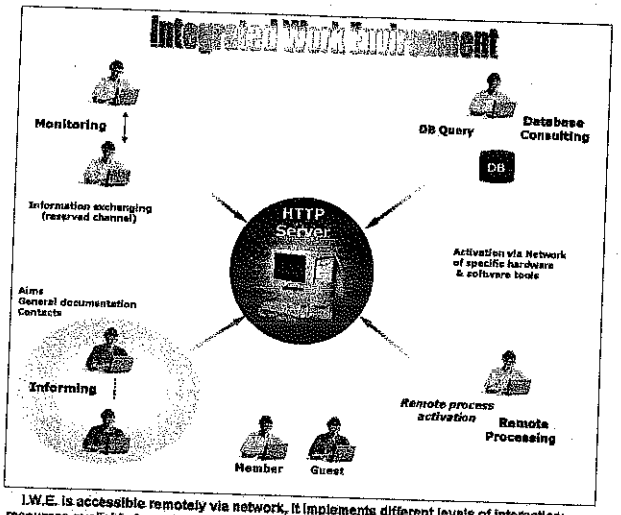
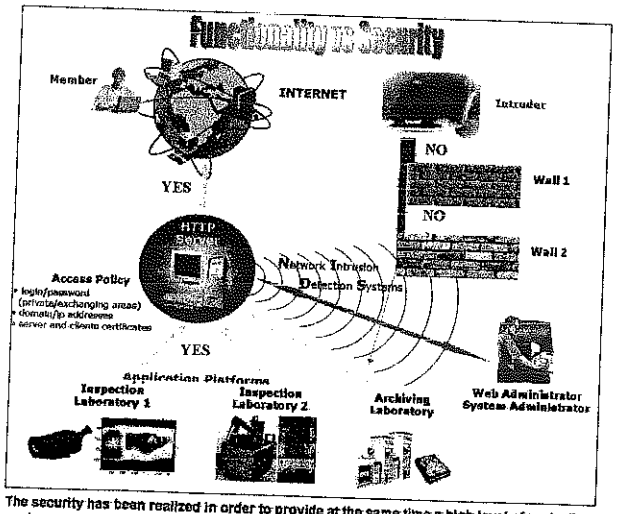
A Secure Web-Integrated Working System: a framework for Web-based interoperability



I.W.E. is accessible remotely via network, it implements different levels of interaction; resources available have been organised selectively according to different user categories



The security has been realized in order to provide at the same time a high level of protection and a guarantee that the global functionality of the system used would have run

I.N.D.U.C.E. :
'Advanced Integrated NDT Concepts for Unified Life-Cycle'

In the frame of the INDUCE-Brite project a web server site has been implemented as an advanced technology for making available an integrated and distributed working environment in the Non-Destructive Testing field.

The system constitutes an innovative application for accessing securely distributed databases and resources as well as running remote applications.

The web system also allows to access knowledge and to exchange technological fields so that it might reduce internal costs of development (open source and freeware philosophy) and also help the optimisation of investigations.

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Istituto di Elaborazione della Informazione

'Sustainable transport technologies for sustainable development'
Valencia, Spain
on 4 to 6 June 2002

Exhibition Poster

A Secure Web-Integrated Working System: a framework for Web-based interoperability

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Within the frame of the European Brite-Euram Project INDUCE: 'Advanced Integrated NDT Concepts for Unified Life-Cycle' a real-time web system has been developed at IEI.

The aim of this work was to implement a remote 'Integrated Work Environment' (IWE) accessible remotely *via* network and also able to implement different levels of user interaction and security, usable by technical communities constituting a well defined working environment.

The system was designed to offer a real and efficient instrument for disseminating world-wide knowledge of the project and, at the same time, to make easy sharing software and hardware resources or other particular information among the members of the consortium.

The information and the resources of IWE have been adequately protected with appropriate security instruments.

IWE general functionality satisfies main requirements for:

- *Informing*: in terms of specific and industrial aims of the project, areas of interest, adopted techniques, general and particular references or contacts, links to industrial and academic international laboratories and centres operating in the interesting application field.
- *Monitoring*: in terms of diffusion of approaches and results by implementing a reserved *channel* of communication inside the consortium. To this end, the site was organised into sub-environments where each partner could find technical documents, results and software produced by the other partners. This facility could also be used for distributing prototypal software requiring a B-test for assessment. Monitoring also allows any partner to access special *environments* to find relevant information, suitably organised and extracted from international databases by performing a continuous search on the network.
- *Remote Processing*: in terms of activation *via* network, through the server-site, of application programs or procedures. In this way, a member can perform remotely a number of operations, such as image processing,

data visualization or analysis. Several other general or specific tools are also available in IWE, which can improve its power just easily integrating new software. In the server prototype, the application software for image treatment is proprietary of IEI.

- *Database consulting*: in terms of remote access *via* a Web-based interface to a relational database, local to the server, where images, other data and information are stored.

IWE can be accessed by two kinds of users: a *generic user*, mainly interested to have a general overview and information as well as the knowledge about the activities carried out within the project, and a *member of the consortium*, mainly interested to exchange with other members detailed technical data. A member, in his turn, belongs to a certain group and can access a specific facility according to his typology.

For these reasons, IWE implements two separate ways of communication:

- anyone can access a *GUEST environment* that contains information of public interest, general goals of the project, a broad description of the main techniques and functions developed, a reference to the state of the art, some explanation or presentation demos, and so on;
- only the members of the consortium can access a *restricted PRIVATE environment* that contains specific technical and scientific results obtained in the different fields of activity, detailed descriptions of the test performed, selected databases (documents, data, images, algorithms, etc.) and programs designed to solve common complex problems.

The actual prototype consists of a mini-cluster of two networked PCs, a *server machine* and an *application machine*, where the different processes run separately and simultaneously. The *server machine* allows public information to be consulted and controls the proper access to the second system for remotely activating application programs; the *application machine* hosts a relational database and a procedure for on-line image acquisition and analysis.

The access to IWE is implemented using different security levels.

From outside, the communication passes through a router/firewall pair, which applies some definable filters (ports, packets, etc.) and a series of other protection filters running on the machine hosting the Web Server (addresses, users, etc.).

Private communication is always encrypted, supported by an authentication based on certificates and moreover files sent to IWE can be encrypted using a system of pairs of public/private keys.

A further control level is also implemented: a system administrator (i.e. the webmaster) is informed in real-time about all the connection tries and can

discover a hacker attempt to pass the security protections. In this way, he has the possibility to stem the attack.

Besides, to check continuously the integrity of IWE, a dedicated software is also able to keep trace of any change happened on the computers.

Finally, IWE is updated continuously in two ways:

1. the webmaster updates the information relative to the monitoring and to the common areas;

2. the partners update the reserved information connecting to theirs private areas through an *upload* procedure, simply accessible via browser, while the webmaster is automatically informed about the operation done.

IWE has shown that knowledge access and intensive data exchange in an advanced technological field can reduce internal costs of development (open source and freeware philosophy) and also help the optimisation of investigations.

Furthermore, a non minor aspect is that the system developed has evidenced that a powerful framework for a Web-based interoperability can be effective also using low cost hardware and a general non expansive approach.

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To: "Ovidio Salvetti" <o.salvetti@iei.pi.cnr.it>, M.Martinelli@iei.pi.cnr.it
Cc: "patrick rollier" <p.rollier@teamwork.fr>, Daniel.Chiron@cec.eu.int
Subject: Company stand/exhibition in Valencia
Date: Fri, 17 May 2002 09:36:40 +0200

Dear Exhibitor ,
Please find enclosed the necessary information regarding your stand in Valencia and your own participation .

- Conference registration :

Each stand is entitled :

- A "free delegate" , who will be taken in charge by the European Commission (economy return flight ticket , as well as 3 hotel nights 3, 4 & 5 June) ; air ticket and hotel booking will be made by the European Commission (please do not book yourself !)

- An extra person invited as an "exhibitor" who will be offered free registration to the Conference.

Could you please send us by return mail the names of the 2 persons who will be on the stand (see attached form), clearly indicating the name of the person whose trip and hotel expenses will be covered by the European Commission.

Send a copy of your answer to diane.bastianelli@cec.eu.int .

The European Commission(Mrs Bastianelli) will then get in touch with you immediately to clear out the modalities of flight and hotel reservations.

- Information on your stand :
Teamwork will provide a basic stand with walls, carpets, lights, furniture (table, chairs, shelves), etc& We will be on site and deliver the equipment requested on the exhibition form in the stand area from Sunday 2 June . You will be able to fully equip your stand from 2pm to 8pm on Monday 3 June.

The number of your stand is : R 18 , its surface is approximately : 12 m2

Equipment requested and provided by Teamwork :
- A PC , Plasma screen and table.

Delivery and Un-installation Information :
The various material (except car prototypes exhibited outdoors) must be delivered by Friday 31 May from 9am to 2pm and 4pm to 8pm at :

Palacio de Congresos
Avenida Cortes Valencianas , 60
46015 Valencia
Tel : +34 96 317 94 00
Fax : +34 96 317 94 01
Contact Name : Julia Suàrez

Each parcel must be clearly labelled with the name of the Conference (Surface Transport Technologies for Sustainable Development) , the company name , the theme area to which it belongs (Road, Rail or Marine) and the number of your stand is R18 .

Car prototypes (outdoors exhibition) are to be delivered and installed on site on Monday 3 June.

The reconditioning of your material can start as soon as the Conference ends , that is from 3pm onwards until 8pm on Thursday 6 June. It then has to be picked up on Friday 7 June from 9am to 2pm at the same address .

- Stand Posters :

We are still expecting the text and pictures for the realisation of the poster exhibited at your stand. Could you please make sure we receive these details before the end of the week so that it can be printed and shown at the exhibition.

We stay at your disposal for any further information.

Best Regards

Sandra Haupois & Patrick Rollier
TEAM WORK
Valencia2002@teamwork.fr

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