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**USER INTERFACE DESIGN IN MEDICAL
DISTRIBUTED WEB APPLICATIONS**

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TOPIC

User interfaces (UIs) are important to facilitate easy learning and operating with IT applications, especially in the medical field. User interfaces must be optimized, intuitive and designed to meet user needs. Technology used in developing intuitive and optimized UI, has great importance to accomplish these expectations.

OBJECTIVES

The present work aims to create a web interface for a online medical app, using a specific technology (HTML table design combined with CSS3) for a complex web application, as an alternative to DIV technology - based web layouts.

A new prototype layout using HTML TD technique, as a reliable alternative to current icMED web interface application, was proposed though collaboration with icMED research team.

METHODS

- ✓ Using HTML table coding, in combination with CSS3, as an alternative to DIV technology, a "fluid design" layout proposal has been developed for icMED online medical application.
- ✓ A graphical interface, without additional external graphics or source images, exclusively from code was designed.
- ✓ Designing the new icMed interface using only HTML and CSS code and scripts, without external image sources.
- ✓ Identification labels used inside input-fields to save layout space

METHODS

- ✓ Using HTML table properties like width and height, instead of CSS properties.
- ✓ Using tables properties in percent to achieve resolution adaptability

CURRENT ICMED INTERFACE

The current icMed web application is developed using fixed DIVs and a fixed resolution, with layout designed with external image and graphical source.

The interface is divided into three main sections: **Gestiune pacient** (Patient Management), **Rapoarte si statistici** (Reports and Statistics), and **Administrare** (Administration).

Gestiune pacient includes a search form with fields for CNP/CID, Judet, Nume, Localitate, Prenume, and Data consultatiei. It also features radio buttons for *Deschide fisa*, *Istoric consultatii*, *Consult. noua*, and *Reteta cronic*. Below the form are buttons for *Cauta*, *CARD*, and *Pacient nou*. A notification states: "Au fost gasiti 110 pacienti din care 25 temporari." Below this is a table of patient records.

Nume	CNP	Ultima consult
ABRAHAM ROXANA(T)	1780105434518	18/01/2016
ABRAHAM ROXANA	1780105434518	18/01/2016
ABRAHAM VASILE	3240302251996	15/01/2016
ABRUDAN EUGENIA	2471129243115	07/09/2015
ABRUDAN VASILE(T)	1320512984812	26/03/2015
ANDREESCU BOGDAN	771860724111118	05/02/2016
ANTONESCU CRISTINA(T)	6080606215676	07/01/2016
ANTONOV IONEL(T)	3020225197779	27/07/2015
AUREL ANALIO LUNGIUME	3090202123410	21/09/2015
BALANESCU1 DUMITRU	1450909357893	03/03/2016

Below the table are navigation buttons numbered 1 through 10, followed by an ellipsis.

Rapoarte si statistici includes a list of menu items: STATISTICI APP, ASP Raportari DSP, Raportari vaccinari, Pacienti in evidenta, Registru consultatii, Evidenta bolnavi cronic, Statistici medicale, Statistici bugetare, Registru de programari, Alerte lunare, Centralizatoare si rapoarte CAS, and Baza de date cu medicamente.

Administrare includes a list of menu items: Servicii unificate, Management utilizatori, Administrare pacienti, Chestionare, Contractare, Contabilitate, Facturi icMed, Suport online, Verificare conexiuni, and Mesaje (13934 necitite). It also features an *Iesire (Logout)* button.

PROPOSED NEW INTERFACE

The new responsive web interface developed using HTML table and with no image or graphical source (just from code lines), adaptable at any resolution between 350px and 1920px.

Utilizator : ms.tm.diabet.tedi (92 necitite)

Administrare

Pacienti in evidenta
Registru consultatii
Evidenta bolnavi cronic
Statistici medicale

Statistici bugetare
Centralizatoare si rapoarte CAS
Raportari DSP
Registru programari

Gestiune pacienti

Registru

Nr. fisa	Nume si prenume	CNP	Ultima consultatie
211	Adam Damian	3570729292911	23/06/2015
217	Albu Daniela	3570729292911	23/06/2015
328	Alecsandri Alexandru	1243422342211	23/06/2015
531	Badescu Lenuta	233245190876	23/06/2015
211	Angheluta Marius	233245190876	23/06/2015
654	Virgulescu Marin	233245190876	23/06/2015
343	Bocaciu Adriana Lenuta	233245190876	23/06/2015
278	Estache Vasilica Leonora	233245190876	23/06/2015
981	Costin Codrin Mihai	233245190876	23/06/2015
331	Ciulache Polixenia Vasilica	233245190876	23/06/2015
786	Cintezoi Valeriu Ciprian	233245190876	23/06/2015
659	Serban Visan	233245190876	23/06/2015
501	Foliol Rodica	233245190876	23/06/2015
506	Lapasun Corian	233245190876	23/06/2015

pagina: 1 2 3 4 5

PROPOSED NEW INTERFACE

e-mail:

Card de sanatate

Cod asigurat:

Nr document:

Activ:

Statut asigurat:

Medic de familie

Nume:

Prenume:

telefon:

e-mail:

Istoric medical

Boala:

Tratament:

medicament: +

doza: + Perioada:

+ **Incarca fisier istoric medical:**

xls **Rasfore**

Simulated prototyped icMED layout adaptation on smart phone

PROPOSED NEW INTERFACE

- To save layout space, fixed identification labels inside input-text-fields were used.
- This was made possible by coding value *"value=" identification text"* in the html code assigned field

Nume cabinet: |

Casa de asigurari:

Telefon:

Reprezentant lega

Adresa cabinet:

Identification text inside dynamic text field

TESTING

Currently having a consistent group of medical staff using the application (aprox. 8.000) the new interface is in testing and collecting of feedback comments.

During the testing process the icMED's users will provide information for the following parameters:

- + ease of navigation
- + display or interpretation errors
- + intuitive navigation improvements
- + adaptability errors to media screens.

RESULTS

- ❑ The new developed prototype interface, using HTML table technology and CSS3 language, as an alternative to HTML DIV technologies is shown in the figure. Advantages:
 - ❑ - simplified CSS code
 - ❑ - larger space for other design elements using identification labels inside text fields
 - ❑ - adaptability to any resolution between 350px and 1920px.
 - ❑ - the tables with their properties, instead of fixed DIVs with CSS properties

CONCLUSION

These methods represent viable alternatives to DIV technology, being widely used by most developers for building web interfaces.

These methods and techniques presented are proofs that adaptive dynamic web interfaces might be developed through combining HTML table with various web interface technologies.

THANK YOU !