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System electronic clinical history applying disruptive technology and methodology agile

RAMIREZ-PERALTA, David†*, ALCUDIA-FUENTES, Ever, LOPEZ-JIMENEZ, Alejandro and RODRIGUEZ-RODRIGUEZ, Elias

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Abstract

Developing three elements: Research objectives, research questions and justification of the same. Objectives and questions should align with each other and go in the same direction to establish what the research is intended to do. The questions tell us what answers the research should find and justification tells us why the research should be done. The criteria for measuring the value of an investigation are: Convenience, social relevance, practical implications, theoretical value and utility. The project culminates with the implementation stage, in this article it is presented until the design stage, which covers aspects such as the definition of the architecture, description of the functions, definition of the data and the descriptions of the interfaces that allows to do An easy navigation between each of the system modules. It should be emphasized that the information concerning the patient will be exclusively used by the hospital prior authorization of the patient, so that the data security mechanism is established, each user (previously registered by the Hospital to whom he provides his services) will consist of a name User and password to access it, which will help improve security as well as the use of electronic signature and data encryption.

Technology, Disruptive, Agile, Web, History, Electronic, Encryption

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* Correspondence to Author (email: david.ramirez@campus.itsc.edu.mx)
† Researcher contributing first author.

Introduction

Generally, health-care institutions in any of their areas have strict control over their daily activities, using conventional methods for the management of large amounts of physical information. This involves complicated and routine work. With the use of information and communication technologies, solutions can be developed that will automatically process the processes demanded by the execution of said work, thus making it possible to improve the service provided to the user

In recent years health care organizations have converted their patients' medical records from large physical files into digital documents the what Reduce he weather from search, the accuracy Y the upgrade; without embargo, All Information is available so that the Use a single user.

At present, companies of all types are implementing software in charge from the Management of information by storing it in the Cloud (Cloud Computing) thus achieving a better performance and security in each of the processes carried out within the Same.

Having data in the cloud involves many advantages because the user can access them from any device with Internet access, either a computer, a tablet or a Smartphone. Thanks to the Cloud you can start editing a document from a phone mobile Y end up from set it up since A PC nail hours after, Keeping the data In the online account personal.

Likewise, the Users They have now the Confidence of having the data safe, without occupying a physical space, and without fear that the physical medium (hard disk, DVD / CD or USB memory) could deteriorate or be lost.

This paper presents the experience of developing an information system using disruptive technology (using Cloud Computing) and agile Scrum modeling. The goal of the system is to automate medical records from the Patients of the Hospital general Dr. Desiderio G. Rosado Carbajal of the city of Comalcalco, Tabasco.

The development and implementation of the Electronic Health History System (SHCE) will be an essential aid for medical and hospital personnel because it is a tool that provides timely basic information on the history clinic from the people, for That is used in any place or circumstance, for both emergency and preventive medicine or surgery what HE you they should perform to a patient.

Development

The SHCE has 3 modules that are essential to run the other and that are the foundation of the system: identify citizens, professionals who access the system and the healthcare resources ATTENTION primary Y Specialized. For To build a regional system, the classic patient master files, professionals and resources have to be Shared.

The first is the user database (BDU), whose main function is to provide each citizen from a number only from History of health of Comalcalco, to which all his health information is linked. This number is the hilvana all pages of user information in a single story. In this way, BDU is the table from Patients common from everybody Health centers and the health card is the Key that allows access to user information. It also contains the administrative details of the citizen, including if you have coverage Sanitary

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And the type of pharmaceutical benefit to which he is entitled, as well as the primary care doctor he has chosen, and can directly access the citizen from his House via Internet.

Second, the structure module, which includes functional services and units (care primary Y Specialized). East Module allows to identify each hospital service, primary care center, emergency device, ie the functional and physical organization of care, in addition to establishing the relationship between the two areas of care for the management of inter-consultations and diagnostic tests. That is, similarly to what happens with BDU in relation to citizens, all the System modules receive from it the identification of the resources of the system sanitary.

He third is he module from access Centralized Of operators, which is the gateway to it: when a professional is going to use it, this module Identifies his key from access Y you Allows the use of the functions of the different subsystems to the what this authorized. Yes BDU Identifies to the Users Y structure the means of the System, this module identifies the professionals.

Quotes

The corporate dating subsystem falls within the common part of SHCE. Responds to commitment to accessibility through patient flow control and coordination from all the Performances Required in the diagnosis and treatment of each process. It is constituted by:

Module centralized appointments that manages agendas from ATTENTION primary,Queries Diagnostic testing or external and sticas and offers worklists to the m or modulescl í nicos.

Manager requests or referrals and tests Diagnostic sticas. it based on the cat to corporate logos, are accessed from the

Modules Clinical for to register the Applications. In turn, they are accessed directly from the citation module to assign the appointment, from the own query.
RRANTY as records, which control the time between Applications Y quotes formanage RRANTY as the time m to wait ximos normatively established in Comalcalco.

The inclusion of all the agendas in the quotes Allows what since any point An appointment can be made for a consultation or diagnostic test. He user can get appointment For the family doctor through a telephone center; If your doctor tells you to visit a specialist, you can get the appointment before leaving the health center; And if the specialist you He says what should return for Review or a diagnostic test, you can assign the appointment since the Own query. From This way they increase for the user the possibilities of choosing the most convenient appointment, it facilitates the coordination of the different appointments that it needs and allows the professionals the joint monitoring of all they.

The integration of agendas to facilitate access to they do not is obstacle for what his Management is still decentralized and under the responsibility of the units that are currently performing this task. It is they who decide which stretches are available for which centers and / or Units.

This appointment module, integrated with request managers for inter-queries and diagnostic tests that work with it, works in health centers and hospitals. The system will also allow the results of the diagnostic tests to be received electronically, automatically entering the patient's health history.

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This will be integrated with the existing information systems of the laboratories of the

Hospitals and with the corporate radiological information system (RIS) (Figure 1).

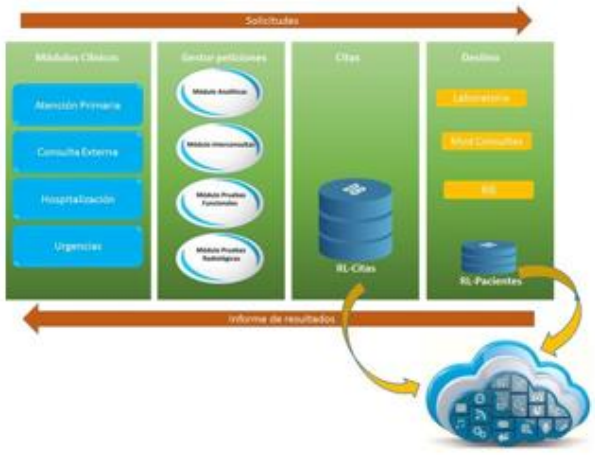

Figure 1 System Components Cl í History Electr nico nico or (SHCE)

Cloud computing

The SHCE allows citizens to obtain an appointment with their family doctor through Internet Thank you to the office virtual in the Cloud, which was created so that citizens Could interact with the public health system, and allows users to change doctors, as well as view and update their data Personal information.

Health history

Is he heart of the SHCE Y Embraces a set Of modules what allow to the Medical manage The clinical information of the patient. All the information is integrated through its linkage to the SHCE and, independence from Its location, is available to Professionals who need it from any point in the Network, with access to the clinical data authorized by the patient through his card Sanitary

The information is organized hierarchically, with different configurations depending on the type of professional who uses it, and allows personalization depending on the professional and the patient. The blocks of information are as follows: the first is basic health data, such as

Health problems, history and allergies; The second is the data related to the diagnostic-therapeutic measures, such as Diagnostic tests and pharmacological treatments; Both are shared by the modules of the different care settings, each of which is differentiated in the episodic information, in the The various contacts in the Patient and constitute the third information block. These sheets collect all the information of the episode and feed the 2 previous blocks. Although they share common elements, there are different sheets for primary physicians, specialists, nurses, social workers, emergencies. In each episode the set of contacts that the patient has made for a specific problem is stored, as well as the diagnostic tests and the treatments used. In this way, all health information is linked to a specific clinical context. In addition to sharing common data, a browser allows the professional to access the information of any episode on any server on which it is stored. There are sheets common to the 2 areas of assistance for the management by processes of the diseases established by the counseling of Health.

At present, clinical modules for primary care, specialist consultations and emergencies are available. The primary care module is used by Family, pediatricians, nurses, social and administrative workers in this field, whose attendance sheet is called the consultation follow-up sheet (HSC) and is different for each type of professional.

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The external consultation module, in addition to its own HSC, includes a sheet for the initial assessment, which we call the "integral assessment sheet", which performs a cross-sectional analysis of the episode, focusing information on the problem current, Y Allows a assessment review

Of the information contained in the common elements of the story, as well as the collection of anamnesis Y exploration by Organs Y Appliances. In this way, the episode is inserted as a frame in the film which is the longitudinal history of the patient. The urgency module is common for the two areas of care.

e-Recipe

The System also makes it possible to develop The electronic prescription, a new model of prescription and dispensing of medicines, where all the prescriptions of each user made with the prescription module are recorded in a "central dispensing module", in which a "pharmaceutical credit" is created with the Complete treatment prescribed by the family physician or by the specialist involved in a particular clinical episode. Both the primary doctor and the specialist can establish treatment durations of up to one year. The patient presents at the pharmacy his health card, which the pharmacist enters in a reader so that the system authorizes the access to the prescription data; Then checks the medication to be dispensed, records the drugs delivered and can inform to the doctor from any incidence. To do this, the pharmacy uses the Web module of dispensations developed in the project, so that the chronic patients do not have to go continually to their Centers from Health To renew treatments Prescribed.

Architecture

The SHCE has a centralized environment and cloud storage that holds common data and applications:

Structural modules: user database, structure and operators.

Subsystem from quotes: quotes, Managers from Requests and Records.

Shared health history and browser history.
and-Recipe.

As for the specific data and applications of each health care area, there is an installation in each of the hospital areas, while the ones corresponding to primary care are centralized. The SHCE is completed with information processing modules that exploit the information generated by the other modules in a homogeneous way.

Results

A system was implemented to store medical records efficiently and economically through smart cards. The developed system consists of a reader-writer device, an Internet portal and visualization and updating software.

The card allows to store more data Relevant of the record clinical, to change Of a slight decrease in the safety of the same.

With already successfully he has Countered the A decrease that originated in the security of the card, for which a double security system was implemented through an encryption and the electronic signature (AES).

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The results obtained are satisfactory, and how they were able to design and construct all the prototypes necessary to put the system into operation.

Thanks to tests performed on both the software and the hardware, the card and the devices performed their functions correctly, this proves to be useful, reliable and safe tools.

Conclusions

The Documents in paper may get or Not retrieving information about an individual patient, but are of very little value when the question refers to groups of patients or the population. For example, how many patients with myocardial infarction are receiving beta-blockers and aspirin?

The electronic data file makes it possible to on indicators from quality, Reviews and clinical research and identification of patients on treatment with drugs that have been withdrawn. As can be deduced, those responsible from the taking from Decisions do not Can and should not need controlled clinical trials for each application in each situation Different

It is possible to improve the management of information about the m é doctor-patient relationship by implementing a software solution that adequately problematice the process and then automate without neglecting the environment that has the management of the relationship between these two subjects and Same software.

The choice from a model gil what HE adjustment to Software requirements, is of great importance at the time of project execution, because depending on the circumstances in which the project is found, the choice made will be transcendent at the moment of Address it.

The Tools Used They turned out Suitable for two factors, the first is the practicality in the execution and secondly because of the knowledge about them, reducing execution times in the tasks performed.

The complex in the elaboration of a software project is not to comply with the functional requirements of the software, but to try to prevent largely mistakes made by users that may affect the operation or optimal system.

During the tests Performed, HE Could Observe that it greatly improves the efficiency and effectiveness in the performance of the daily tasks with the tool Elaborate

References

Alliance. (2008). Alliance ayuda a fisioterapeutas a adoptar las TI. Recuperado de http://www.healthcareitnews.com/news/ehr-alliance-help-physicians-adopt-it

Beltrán, M. (2013). Cloud computing: tecnología y negocio. Madrid, España. Paraninfo.

Castillo Changuan, C. (2010). Desarrollo de un sistema de registro hospitalario para SOLCA Manabí núcleo de Portoviejo. Quito:Escuela Politécnica Nacional.

Canada Health Infoway. (2001). Beneficios de los registros electrónicos de salud. Recuperado de https://www.infoway-inforoute.ca/ about-ehr/benefits

Center for Medicare and Medicaid Services. (2007). Selecting a development approach. Recuperado de http://www.cms.gov/SystemLifecycleFramework/Do wnloads/SelectingDevelopmentApproach.pdf

Clancy, C. (2003, julio). Key Capabilities of an Electronic Health Record System. Do- cumento presentado en el Congreso de Servicios de Salud, Rockville, MD.

De la Cruz Tovar, G. (2006, noviembre). Interoperabilidad en los sistemas de información en salud en México. Documento