

“Informarse.es salud”: a platform for managing, reviewing and distributing multimedia content in the work place of health professionals

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Abstract

The goal of “Informarse.es salud” is to offer health care content to the public through different channels: web, cell phones and television screens installed in hospitals. In order to offer this service a platform has been developed for all the steps of any audio and video production process, such as: creation, cataloguing, reviewing, publication, distribution and broadcasting of contents. As a result, hospitals can manage their audio and video contents from their private spaces and then send them for review to be included in the “Catalogue of Digital Assets” of the Department of Health, and finally they can prepare a time schedule in the television screens they already have installed. The “Catalogue of Digital Assets” is increasing size with the material produced by hospitals and by other content creating agents, offering a unique, centralized and reviewed repository to feed the different channels. The platform “Informarse.es salud” went into operation in 2006, there are more than 2.500 television screens in more than 650 hospitals in Andalucía, with more than 60.000 videos watched by web channel and 15.300 by cell phone channel.

Key words: Information Services; Access to Information; Health Education; Audiovisual Aids; Teaching Materials; Consumer Health Information.

Resumen

“Informarse.es salud”: plataforma para la gestión, revisión y distribución de contenidos multimedia en entornos de profesionales sanitarios

El objetivo de “Informarse.es salud” es ofrecer contenidos sanitarios a la ciudadanía a través de diferentes canales: web, telefonía móvil y pantallas de televisión situadas en centros hospitalarios. Para ello se ha desarrollado una plataforma que ofrece servicio para todos los pasos que intervienen en cualquier proceso de producción audiovisual como son: la creación, catalogación, revisión, publicación, distribución y reproducción de los contenidos. El resultado es el siguiente, un centro hospitalario puede gestionar sus contenidos audiovisuales desde su espacio privado, enviarlos a revisión para que sean incluidos en el “Catálogo de Activos Digitales” de la Secretaría de Salud y finalmente elaborar una programación horaria, a partir de los contenidos aceptados, para las pantallas de televisión que tenga instaladas. El “Catálogo de Activos Digitales” va creciendo con los contenidos producidos por los centros hospitalarios y por otros agentes de creación de contenidos y ofrece un repositorio único, centralizado y revisado para alimentar a los diferentes canales. “Informarse.es salud” lleva en funcionamiento desde el año 2006, hay más de 2.500 pantallas de televisión en más de 650 centros hospitalarios de Andalucía. Lleva contabilizados más de 60.000 vídeos vistos a través del canal web y 15.3000 a través del canal móvil.

Palabras clave: Servicios de Información; Acceso a la Información; Educación en Salud; Medios Audiovisuales; Materiales de Enseñanza; Información de Salud al Consumidor.

Resumo

“Informarse.es salud”: plataforma para a gestão, revisão e distribuição de conteúdos multimídia em ambientes de profissionais da saúde

O objetivo de “Informarse.es salud” é oferecer conteúdos de saúde à cidadania através de diferentes canais: web, telefonia celular e telas de televisão instaladas nos hospitais. Para isso foi desenvolvida uma plataforma que oferece serviço para todas as etapas de qualquer processo de produção audiovisual: criação, catalogação, revisão, publicação, distribuição e reprodução dos conteúdos. O resultado é o seguinte: um centro hospitalar pode gerir seus conteúdos audiovisuais a partir do seu espaço privado, enviá-los para revisão para que sejam incluídos nos “Catálogo de Ativos Digitais” da Secretaria de Saúde e finalmente preparar uma programação horária a partir dos conteúdos aceitos para as telas de televisão instaladas. O “Catálogo de Ativos Digitais” está crescendo com os conteúdos produzidos pelos centros hospitalares e por outros agentes de criação de conteúdos e oferece um repositório único, centralizado e revisado para alimentar os diferentes canais. “Informarse.es salud” está funcionando desde 2006, tem mais de 2.500 telas de televisão em mais de 650 centros hospitalares da Andalucía, com mais de 60.000 vídeos assistidos através do canal web e 15.300 via o canal celular.

Palavras-chave: Serviços de Informação; Acesso à Informação; Educação em Saúde; Recursos Audiovisuais; Materiais de Ensino; Informação de Saúde ao Consumidor.

INTRODUCTION

The platform "Informarse.es salud" is based on several software components developed internally. We are going to focus on the two most important ones which are also the two more likely to be extended: the Digital Asset Manager (DAM) that controls the whole audio and video production and distribution process and the Multimedia Integrated Presenter that enables to reproduce the program planning with the material showed on the television screens. Both components are software free and based on other open source components.

DIGITAL ASSET MANAGER

The Digital Asset Manager is the center that controls the whole audio and video production process of "Informarse.es salud", from uploading the multimedia content until its distribution on the different channels. DAM offers the usual functionality of a content manager (creation, editing, metadata, versioning, workflow control, etc.) and also the specific functionality for dealing with multimedia files (uploading large size files, distribution, format conversion, etc.).

DAM is built with the philosophy of offering service to external portals which offer the "frontend" that each role of "Informarse.es salud" needs. Thus, DAM has the required Application Programming Interface (APIs) for third parties applications that may get connected and carry out the whole "Informarse.es salud" workflow or parts of it. DAM is developed in Java¹ following the Open Services Gateway Initiative (OSGI)² standard with a service-oriented architecture making it easily scalable and extendable through new components and services. All this provides us with the required flexibility to meet all processes and roles that take place in "Informarse.es salud" workflow. The best way of explaining DAM operation is through the workflow that the content of "Informarse.es salud" follows and that DAM controls from the beginning of the process (creation) until the end (distribution).

Content Creation

"Informarse.es salud" came into operation in 2006 and more than 400 audio and video content had been created adding up to more than 15 hours of broadcasting. Once the contents are produced, the next step is to activate them into the system in order to be able to work with them. The

usual problems any multimedia content producer faces are the following ones:

- Diversity of multimedia formats: there are currently many multimedia container formats, each one using different codifications for audio and video with different profiles, codecs, bitrates, etc. DAM offers an automatic service for multimedia format conversion. Any given content uploaded into DAM is automatically transformed into a light format of pre-viewing that enables viewing the content in all the workflow stages without losing reference of the original files. This excludes the problem of the initial video format for content creators since they will always work with a proxy format that can be viewed online.
- Storage problems: Multimedia files are usually large, making it difficult to store them in a server. DAM offers an uploading system for large size multimedia files as well as an extraction component of this type of files own metadata, such as duration, bitrate, codification, codecs used, etc. DAM infrastructure also offers a Storage Area Network⁴ (SAN) for all original files together with the results of the different conversions.

Definition of different schemes of multimedia contents

Usually multimedia contents with which we work on "Informarse.es salud" do not correspond with just one video. For example, we work with a type of content made up of a miniature image of the video showed some seconds before the broadcasting itself, a fly with the logo of the Health Department of Andalucía, a subtitle file and an audio file described for the deaf. DAM enables to create this kind of contents from a scheme so that content producers only need to fill in the different fields of the scheme with the required files in order to give shape to this type of multimedia formats. The way in which all these components are combined is specified in a content definition file that follows (SMIL)⁵ standard proposed by World Wide Web Consortium (W3C)⁶. When a reproducer asks for a given DAM content, its definition file is given in order to start reproducing it according to its definition. Other schemes used are the "playlist" type which is basically a sequential reproduction list or a "quad-split" type that enables to see four video sources at once.

DAM offers a web portal with a private space to different content producers (hospitals, public companies or even the department of health) with all this functionality so

that they can work with their audio and video contents and decide which of them will be included into the "Catalogue of Digital Assets" of the Department of Health. Also, thanks to its modular, distributed and service-oriented architecture, we are able to display this private space within the network of the center using its own local infrastructure and storage to improve its efficiency. Thus, the end user will have the feeling that he/she is always working on a local network environment whereas the contents are automatically synchronized with DAM central repository in an offline and autonomous way through supporting processes.

Content Review

The project "Informarse.es salud" like any other content dissemination project, must offer some devices that enable to review and regulate the contents issued on the different channels. Thus, we needed a single repository in order to centralize the contents created by the different content producing agents. This repository is what we call the "Catalogue of Digital Assets". This place has two goals:

- To review contents. On the one hand, it is a place where members of the Department of Health review team can validate the contents that may be published.
- To re-use contents. All contents approved by the editor are automatically included into the "Catalogue of Digital Assets" meaning that they can be published in any channel of "Informarse.es salud". Therefore, the audio and video production that often is scattered over the content producing centers becomes centralized.

Content publication and distribution

Content distribution is a very important part of the audio and video process because once the contents are created and approved, they have to reach the public.

Similarly to the "Content creation" stage, those in charge of publication and distribution have to deal with some issues directly related to mass distribution:

- Distribution servers. Mass distribution of audio and visual contents is often related to the bandwidth issue. Many times the use of external servers or specialized Content Delivery Networks⁷ is necessary to take contents to the general public. DAM offers con-

nectors with several distribution services, such as Simple Storage Service⁸ (S3) by Amazon Web Services⁹ or streaming live video content server Red 5¹⁰ and Flash Media Server¹¹. We can create a channel that uses a given distribution server so the publisher/administrator can go without the channel of the copy processes that are being carried out when they decide to publish a content on their channel. Besides, it allows third parties to develop their own connectors and to start using them by only meeting a few given interfaces and stating the new service within the DAM ecosystem.

- Diversity of formats for each type of channel. Content format is closely linked to the channel through which is distributed. For example, in "Informarse.es salud" 3Gp video format is used for the mobile channel, flv format for web channel and mp4 format (h264 + AAC) for hospital setting distribution channel. DAM does the automatic conversion of contents according to the selected channel, therefore this process is transparent for publishers who are not very familiar with the details of each particular format and channel.

The two issues mentioned above (distribution server and format) are the ones that characterize a channel for DAM. Thanks to this characterization we can enable the publisher/administrator to go without a channel for all copy and conversion processes that imply any publication process.

We are currently working on connectors for new distribution servers, tests are being done for content publication in Bittorrent¹² servers and its later distribution through Peer-to-Peer (P2P)¹³ protocol for all the screens installed in hospitals (there are more than 2.500). Another channel we are going to explore is social networks like Facebook¹⁴ that reach thousands of users and could become a new distribution channel for our contents.

An important functionality in a distribution channel is its capability to support contents in a playlist format of time schedule. Channel publishers/administrators have a web tool from which they can distribute the contents of the "Catalogue of Digital Assets" in a sequence creating playlists of time programming that will be reproduced by the viewing points, mainly the screens of "Informarse.es salud". These playlists also enable to book time slots in order to include live events that will be managed like a type of content within DAM.

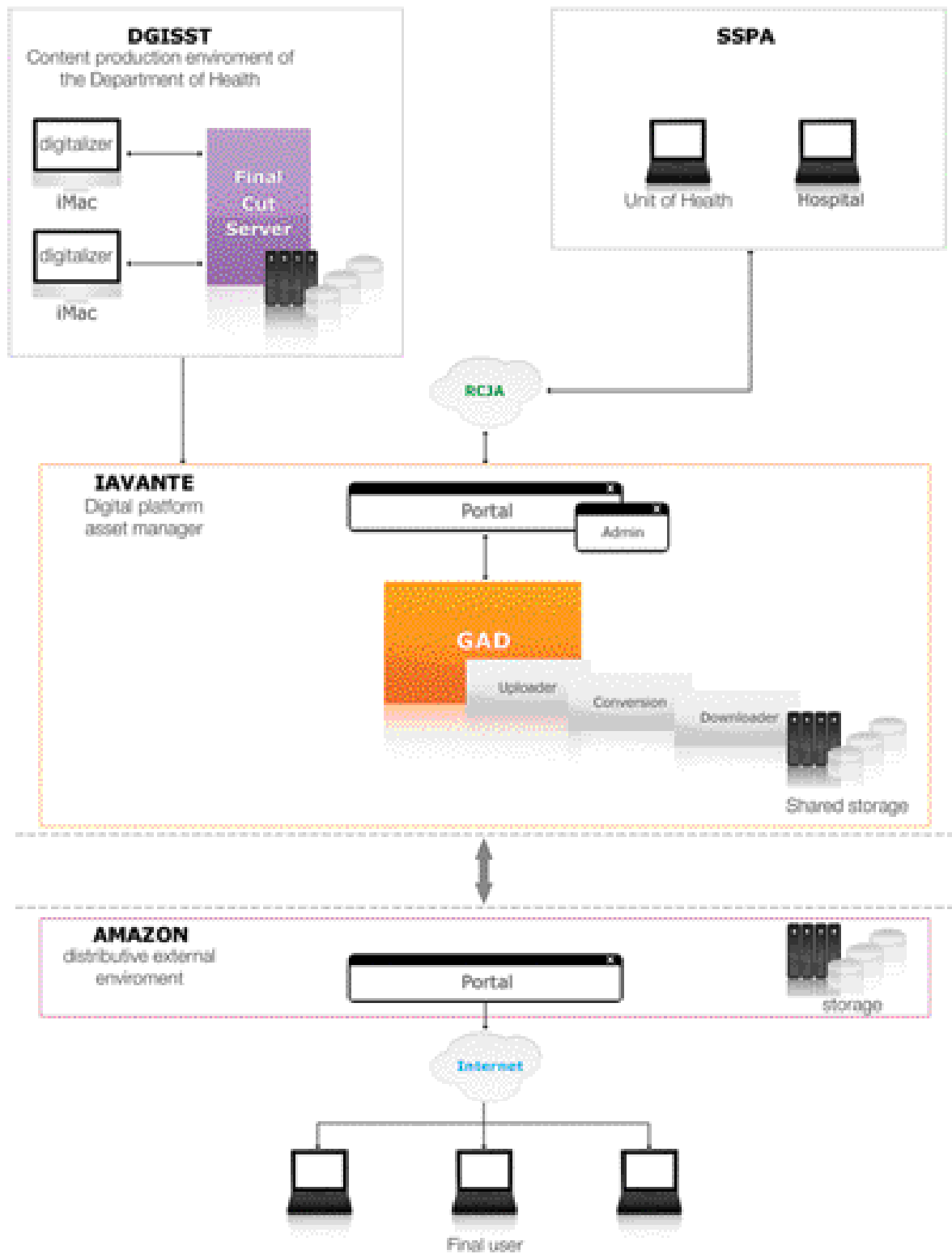


Figure 01 - Integrated DAM architecture within the corporate network of the Department of Health of Andalucía and using Amazon S3 external distribution server.

MULTIMEDIA INTEGRATED PRESENTER

One of the most popular channels of "Informarse.es salud" are the TV screens installed at the hospitals of Andalucía. There are currently more than 2.500 screens installed in more than 650 centers and the number keeps growing. Each screen includes a computer that plays the programming playlist allocated to each viewing point. The control for this broadcast is made through a Multimedia Integrated Presenter profile.

The goal of the Multimedia Integrated Presenter is to become an integration platform that will provide citizens with different services through these viewing points installed at hospitals. The idea is to use one single hardware (in this case the viewing points of "Informarse.es salud" made up of a TV screen and a computer) in order to offer different services independent from each other. Services range from existing resources for sending messages by bluetooth or as an Internet access point to the most immediate services, such as allocating other visual resources to a region of the screen. Each one of these services is packaged as a virtual machine so that developers can do without the underlying architecture in order to focus on the application layer.

The viewing areas installed at the hospitals are currently offering the playlist viewing profile of the time schedule of "Informarse.es salud". They also enable to execute other profiles like for example showing information which is interesting for the user through labels or overlapped messages and another one informing the news of the Department of Health portal through Really Simple Syndication (RSS). Thus, a hospital user could be watching an "Informarse.es salud" video and being informed through text with overlapped messages or using other areas of the screen. Other profiles developed in order to show the potential use of the platform is information to mobile phones by Bluetooth or Radio-Frequency Identification (RFID) integration (with user cards) to show possible customized services.

FUTURE

Both DAM and *Million Instructions Per Second* (MIP), the two software components behind "Informarse.es salud", are ambitious and had been developed to support more services besides "Informarse.es salud". The goal is that they can be a reference for third parties to imagine and develop new innovative services for citizens using the infrastructure and the possibilities they offer. DAM as man-

ager, repository and center of the whole audio and video process and of content management and MIP as a service integration platform that gives us a window and hardware resources through which we can offer services at hospitals.

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