

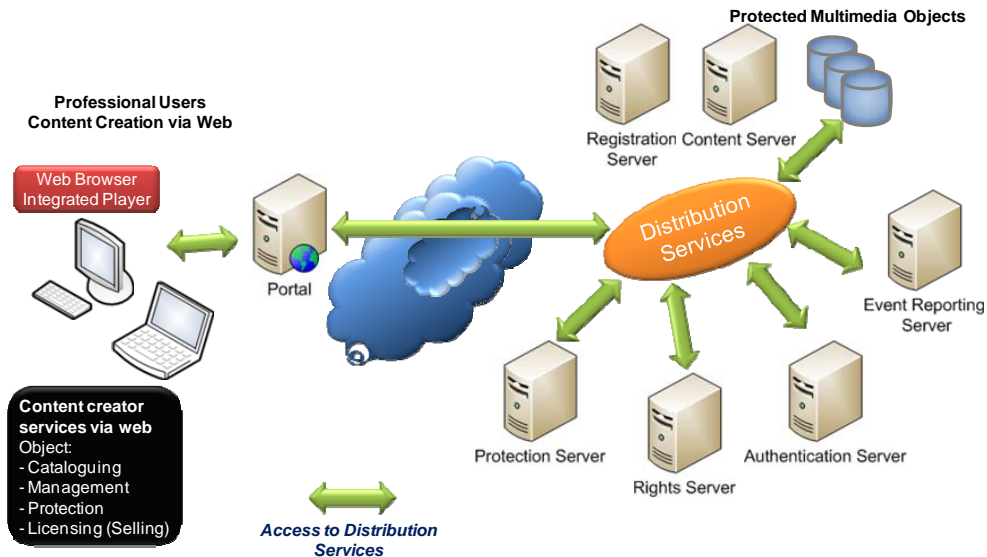
## EXAMPLE SCENARIOS FOR DMAG SERVICES

### DMAG Web for Content Creators

A possible scenario focused on the creation of content and addressed to professional users is shown in the following figure. It is an example of a

multimedia content creation scenario via web. The servers and modules involved are: Content Server, Event Reporting Server, Authentication Server, Rights Server, Protection Server and the Registration Server. The cataloguing,

management, protection and licensing (selling options) of content is done via the web portal, where the multimedia content can be uploaded and protected. Searching functionalities are also provided.

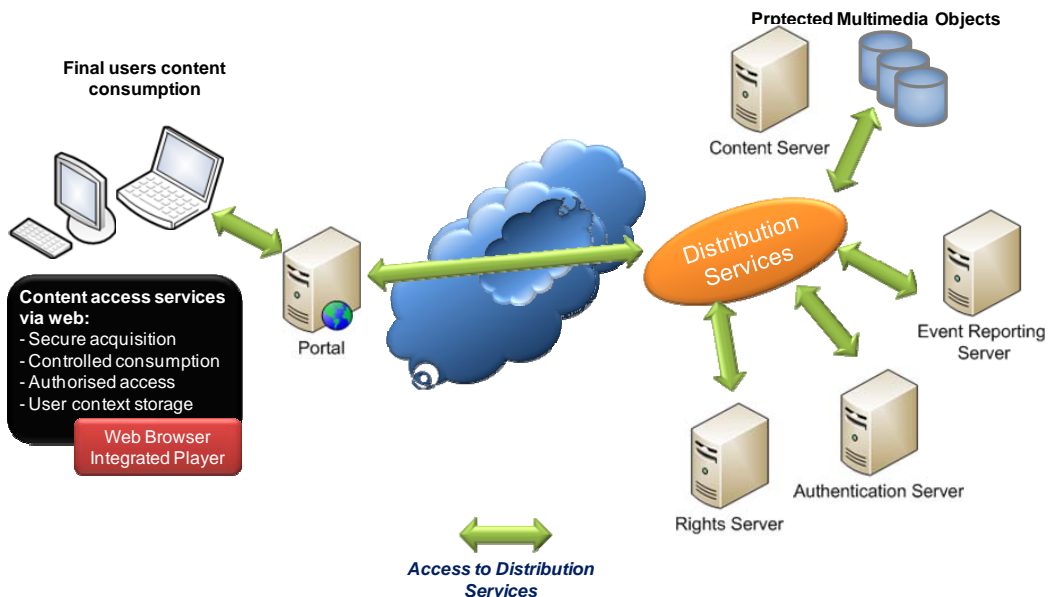


### DMAG Web for Final users

A possible scenario focused on the consumption of content and addressed to final users is shown in the following figure. It is an example of a multimedia

content consumption scenario. The servers and modules involved are: Content Server, Event Reporting Server, Authentication Server and Rights Server. The consumption of the content is done using

a web browser integrated player, which controls that the user performs authorised content consumption and informs of the actions performed. Searching functionalities are also provided.



The **DMAG** (*Distributed Multimedia Applications Group*) of the Department of Computer Architecture (DAC) of the Universitat Politècnica de Catalunya (UPC) in Barcelona has developed a set of *services* that can be organised into

several application scenarios all of them related to the management and distribution of multimedia content with associated intellectual property for different devices (PC, mobile, etc.). These services provide different functionality, but all

of them have in common the aim of supporting the protection and governance of multimedia content, respecting the intellectual property rights associated to them.

## DMAG Services

The following servers and modules are available from DMAG.

**Authentication Server:** It provides authentication of users and web services among them inside a distributed system using SAML (Security Assertion Markup Language). With this language it is possible to create tokens for users' authentication in front of the different services or even services in front of other services. These tokens contain information about the user that generated the request, the moment when it was done, etc. Moreover, we use public key infrastructure (PKI) techniques (digital signature and verification) in order to guarantee that tokens cannot be reused and that users are not impersonated.

**Registration Server:** It provides registration functionality for the digital representation of multimedia objects. This representation follows the MPEG-21 Digital Item (DI) format, which is XML-based.

**Rights Server:** It provides all functionality for the creation, management and authorisation of distribution and usage rights over digital content. It is separated into

two main modules, the license creation module and the user actions authorisation. The format of the licenses sent is based on the MPEG-21 Rights Expression Language (REL) standard or the OMA DRM Rights Expression Language.

**Event Reporting Server:** It provides the registration of events and operations performed by different users and services inside the system. The format of the reports sent is based on the MPEG-21 Event Reporting standard.

**Content Server:** It provides secure storage and distribution for multimedia content. It provides access to the multimedia content from user applications.

**Protection Server:** It provides some security aspects to the system, like hashing of digital contents, digital signature and encryption of resources, among others.

**Payment Management Server:** It stores the payments that have to be done by the users of a system as a consequence of their actions. The information stored can be downloaded from a billing system that allows charging the corresponding

amount to each user. The integration depends on the specific payment system.

**Portal:** The entry point to the distribution services from the content creator and the final user side. Everything can be done through the portal: Searching and selling of content, content rendering via the integrated player, etc. It is also possible to install some local modules to consume the content in a secure and authorised way.

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