1. mediaTG summary

mediaTG's mission and vision is helping digital media businesses providing them with secure multimedia content management tools.

These objectives are achieved with a modular software platform, *mtPlatform*, which allows digital media businesses to drastically reduce time for their Information Technology infrastructure development. Our customers can focus on their multimedia business, while we take care of the software platform they need.

In other words, our value proposition for our potential customers is to reduce the time and cost of software development, thanks to *mtPlatform*. This can be done as the platform is completely developed and can be adapted to different scenarios in a small amount of time, thus reducing development costs and avoiding the setting up from scratch or from a limited set of proprietary modules. It also allows the easy integration with existing software.

Our market is a B2B one, while our customers might offer a B2C one. *mtPlatform* could be useful for potential customers in many different business areas, such as the audiovisual, eLearning and eHealth sectors, to name a few.

2. Business definition

mediaTG has developed *mtPlatform* (mediaTG's media Platform), a modular software platform to help the development of software applications for secure multimedia content management and distribution on top of it. Using *mtPlatform*, customers dramatically improve time to market for their new services.

mtPlatform is working and has been validated in real cases with real customers.

mtPlatform could be useful for potential customers in many different business areas, such as:

- Audiovisual (music, video, film, photos) content selling and distribution:

    - Customers could provide services such as search, licensing, authorization, download, streaming, tracking of user actions, etc., for any kind of audiovisual material.

- eLearning content selling and distribution:

    - Customers could provide services such as search, licensing, authorization, download, streaming, tracking of user actions, etc., for eLearning material.

- Personal photo albums distribution:

    - Customers could provide services for protecting photo albums from unauthorized access, giving permission only to specific people.

- Advertisement selling and distribution:

    - Customers could provide services for the distribution of digital advertisements to be inserted in paper publications, web sites, with different qualities and prices.

- eHealth service providers:

    - Customers could provide services, such as electronic health records management, focusing on privacy and security.

- Physical goods metadata:

    - Customers could provide services for the creation, search and management of metadata associated to physical goods in the context of the Internet of Things.

In any case, *mtPlatform* can be used in many environments as it supports any kind of multimedia content, including its associated metadata.

Next figure summarizes the different markets currently considered:

In summary, mediaTG offers *mtPlatform* to those customers who want to provide services for the secure distribution and management of multimedia content for their final customers. That is, mediaTG focuses on the business-to-business part whilst its potential customers deal with the final users of the service.

To sum up, our value proposition for our potential customers is to reduce the time and cost of software development, thanks to *mtPlatform*. This can be done as the platform is completely developed and can be adapted to different scenarios in a small amount of time, thus reducing development costs and avoiding the setting up from scratch or from a limited set of proprietary modules. It also allows the easy integration with existing software.
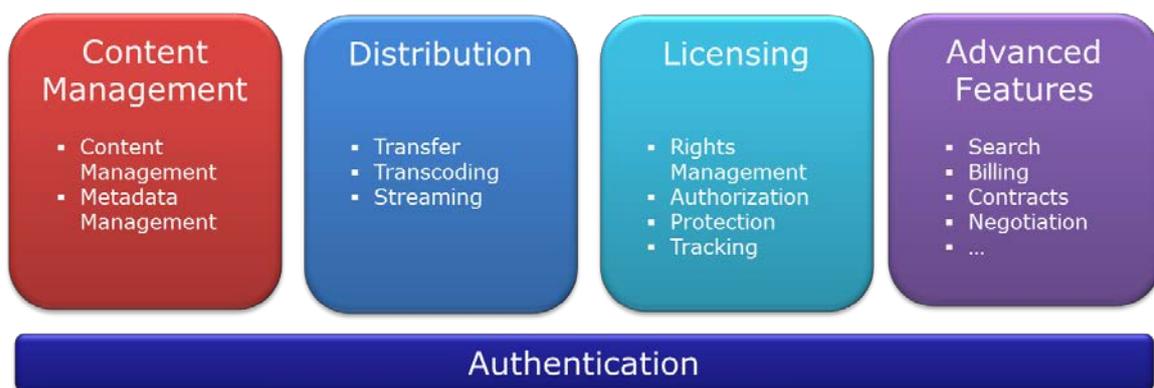
3. mtPlatform

mtPlatform is a service-oriented platform based on the flexible web services approach. It consists of several modules and services, which individually provide a subset of the whole system functionality needed for registering, protecting and governing multimedia content. *mtPlatform* encompasses an important part of the content value chain, from content creation and distribution to its consumption by final users. This middleware software platform is implemented using REST-based web services (REST, Representational State Transfer). In this way, it has the advantages of service-oriented functionality, like the possibility of decoupling into different subsystems, whilst providing a more efficient and light-weight web service infrastructure. It has been developed by the company mediaTG (http://mediatg.com) in collaboration with the DMAG-UPC, a research group from UPC · BarcelonaTech (Universitat Politècnica de Catalunya).

mtPlatform can be used to build DRM-enabled applications (where DRM stands for Digital Rights Management). However, it can be also used to set up different business models based on content management, content distribution, content licensing and protection, content governance (also known as authorization-based content access control), reporting, search and authentication. Furthermore, specialized vertical markets can be implemented on top of it.

One of the advantages of service-oriented DRM functionality relies on the possibility of decoupling it into different subsystems depending on the needs of the application that is going to be implemented, while being able to share the same common services between different applications with different requirements, thus reducing costs.

mtPlatform is based in renowned Standards in the multimedia field, but other standards could be easily supported, if required by customer application.

Next figure shows an overview of *mtPlatform* modules and functionalities:

4. mediaTG products over mtPlatform

mtPlatform has been completely developed and tested in real environments. Thanks to this, mediaTG has developed two products for two different vertical markets demonstrating *mtPlatform* usage and advantages. These products are *mtMedia*, oriented to the audiovisual market and *mtLearn*, oriented to the e-learning market.
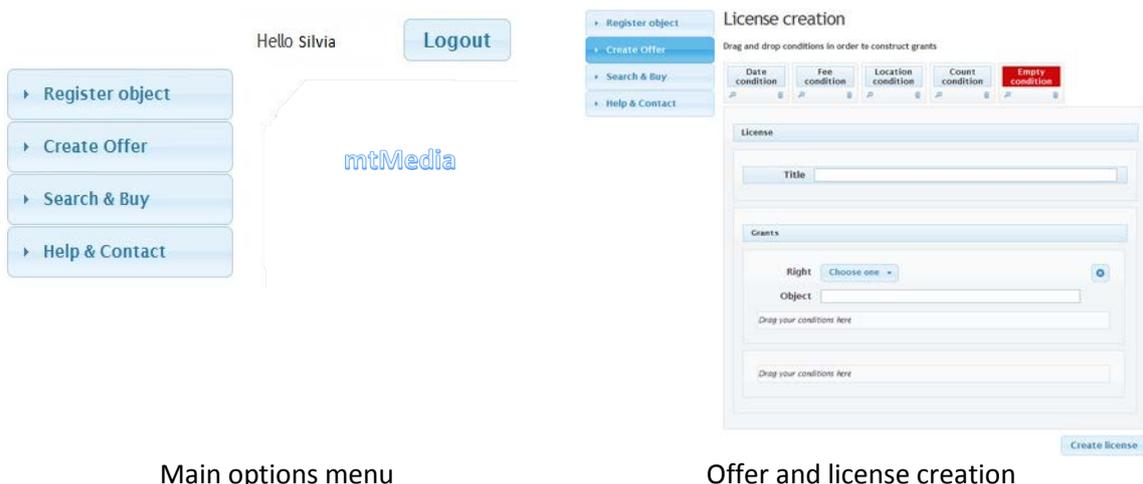
Those are two possible implementations of vertical markets over *mtPlatform*, but other will come in the future. Some examples of possible vertical markets supported by *mtPlatform* are: Advertising, e-health, photo albums, film distribution or music distribution.

4.1. mtMedia

This is a vertical marketplace oriented to content management in the audiovisual market. It covers content registration, protection, search, licensing, authorization-based content access control, content storage and reporting. In this case, there is a need for an interface so that producers, exhibitors and other actors involved in the audiovisual value chain can register and publish their content and determine and modify their offers. This functionality is provided by means of a web portal and also a mobile application.

Once content is registered, it is ready to be traded. The portal itself is useful for promotion, and can be linked from external sites.

The following figures show the main functionality of the mtMedia portal. The main options menu, allows user to move between the different options she has inside the web application. These options are object registration, which includes object metadata and resources, offer and license creation and search and buy.

Main options menu   Offer and license creation

Object Registration: Metadata and Resources   Object Search

4.2. mtLearn

This is a vertical marketplace oriented to e-learning. It covers content registration, protection, search, licensing, authorization-based content access control, content storage and reporting. In this case, there is a need for an interface so that authors and editorials can register and publish their content and determine and modify their offers. This functionality is provided by means of a web portal and also a mobile application.

Once content is registered, it is ready to be traded. The portal itself is useful for promotion, and can be linked from external sites.

Example: A learning content developer wants to trade and distribute this content. For this purpose, a platform is needed to support registration, catalogue, search, licensing options (prices, time frames, territory, etc.), access control and system usage reporting. mtLearn offers all these features.

A demo of this service can be accessed at mtLearn.

mtLearn

ptbuyer
buyer, seller

Search...   🔍   🏠 Dashboard

Objects & licenses

Register object
Create offer

Search & buy

General
Created objects
Purchased objects

Help

📊 Last week

🚌 **3**
DI created

👕 **2**
Offers created

🏛 **2**
DI purchased

☰ Your last created objects

Title	Creator	Creation date
testing	ptbuyer	May 10, 2013 12:44:08 PM
algo	ptbuyer	May 23, 2013 10:37:47 AM
sdfg	ptbuyer	May 23, 2013 12:10:38 PM

☰ Your last purchased objects

Title	Creator	Creation date
testing	ptbuyer	May 10, 2013 12:44:08 PM
Sherlock	demoUser	May 23, 2013 9:09:51 AM

5. Combining mtPlatform modules: Some example scenarios

mtPlatform modules can be used as a whole, like in mtMedia or mtLearn, but they can be also combined as customer application requires. So, in the next subsections we describe how modules are able to work on different scenarios for managing multimedia content depending on the services they use.

mtLicense, *mtAccessControl* and *mtProtection* are some examples of the scenarios that could be implemented with *mtPlatform*. They are described in more detail next.

mtProtectionMobile is a particular implementation of *mtProtection*, where the client application is specific for mobile devices.

5.1. mtLicense

This scenario is applicable to some sites with specialized content (e.g. professional medical images) willing to offer users the possibility to trade with it and provide users a powerful means to prove authorship. Although content can be directly accessed from those sites, it may be subject to some restrictions that do not enable users to use it for free. This is the case when content is distributed under copyright (all rights reserved) for example, or one of the different Creative Commons Non-Commercial models (http://creativecommons.org/licenses/). The web portal would define some license templates to be chosen by users if desired when uploading their images. Content would be automatically registered through external services and a link would be provided from each image towards the trading portal for those users interested in licensing them (e.g. for being published in medical publications or used for comparing them with other medical images results).

mtPlatform modules involved in this scenario are content management, advanced features, like search and licensing, specifically tracking functionality. It is based on the usage of registration functionalities, leaving rights management for being tackled by external sites or services. In this scenario, the *mtPlatform* architecture acts as a mere intellectual property registry, proving content ownership and offering the possibility to link content to external sites that deal with its commercialization, as e.g. YouLicense, Getty Images, etc.

5.2. mtAccessControl

This scenario is useful for applications where users need to handle or modify content without restriction or when users do not want to be limited to use specific applications. Although the access to content is authorization-based, content is given unprotected to the purchasing user, so they can enjoy it without restrictions.

For instance, it would be suitable for a professional trusted environment, where a content distributor may want a solution for trading and distributing unprotected audiovisual content. Content trade may support different licensing options, such as different pricing schemes, time frames, territories, etc. Content could be delivered unprotected, since it will be transformed by its recipient in order to adapt it to different online and offline publishing formats. However,

the content distributor may want to be sure that only those clients that own a license can download content. That is, content access needs to be controlled and reported.

Another possible scenario would be that devised for content providers or distributors that want to use their own protection mechanisms and content management systems, consequently content is never stored outside their systems. In such scenario, when registering content, proprietary identifiers supplied by content provider need to be used for identifying external content provided by content owner. Once objects are registered, rights offers can be bundled to them. Licenses will be issued to formalize the acquisition by interested parties. Content providers or distributors will have to design their own applications to manage the access to encryption keys and content from their systems integrating them in access content applications (e.g. players and editors) or otherwise provide an API so that their content can be accessed from third-party applications. An example could be a TV broadcaster willing to license its own productions, but without storing them outside their systems, thus preserving complete control over its storage and distribution.

mtPlatform modules involved in this scenario are content management, search, licensing, content storage (optional) and tracking. This scenario includes rights management, although the content could be stored out of the platform.

5.3. mtProtection

This is the most common scenario, since it is covered by almost all DRM architectures. In this case, there is a need for an interface so that content creators can register and publish content together with their corresponding offers. This functionality can be provided by means of specific editing user applications or otherwise integrated in a web portal. Once content is registered, it can subsequently be linked from external sites. Therefore, content promoted in external sites can include links towards the licensing portal. Moreover, the licensing portal itself would also be useful for promotion. In this business scenario, content is accessed by using DRM-adapted tools such as players and other rendering applications.

An example of a business scenario in the music industry could be a music producer looking for a solution for publishing, trading and distributing protected audio files. As in *mtAccessControl*, content trade needs to support different licensing options, such as different pricing schemes, time frames, territories, etc. However, here content access needs to be protected, controlled and optionally reported. Content registration and publication can be provided to the music producer through a customized publishing and trading portal that makes use of external services. Content access will be done through a DRM-enabled application that downloads or receives the content via streaming. This example does not cover the case where content has to be further processed, in which a different set of rights (e.g. adapt, embed) would be needed.

mtPlatform modules involved in this scenario cover content management, protection, search, licensing, content storage and tracking. In this case, there is a need for an interface so that content creators can register and publish their content and determine and modify their offers. This functionality is provided by means of specific edition user applications or otherwise integrated in a web portal.

5.4. mtProtectionMobile

Inside this scenario we consider the use of mobile devices not only for rendering but also for registering content being captured with the mobile device. The goal for being able to register content from mobile devices would be related to author attribution or business opportunity, since content may have a relevant monetary value. This would be the case of images or videos corresponding to natural disasters, accidents or celebrities found in unexpected or funny situations. In such situations, the most important feature is the "opportunity" of the multimedia content being captured; that is, the fact they were taken in the right place at the right moment without the presence of official mass media when the event occurred. These videos or images may be used on TV shows or electronic newspapers or magazines, which could become a source of income for recognized authors.

So, the main innovation of this scenario is that the user application connecting to *mtPlatform* is developed for mobile devices (smartphones or tablets) instead of being a web portal. It uses the same *mtPlatform* modules as *mtProtection*. Nevertheless some of the functionality especially that related to content protection could be moved to the server if the mobile device does not properly support all the capabilities needed.