Video shop with DRM

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DRM enables a content provider to have some confidence that a user is only playing a video, not copying it. It is a set of technologies implemented in all modern browsers and app platforms, though due to its "security" nature it is often seen as mysterious and difficult to work with.

That need not be so! This project will extend an e-commerce product with the capability to sell access to watching videos, while at the same time protecting the videos with DRM to ensure that they cannot be copied by the user, only watched.

High level goal

Create a product that integrates with a popular web-based e-commerce platform (e.g. Squarespace Commerce) and extends it with DRM-protected video sales. The result should enable the following scenarios:

- Purchase the right to watch a video for N times and/or within M hours of purchase.
- Purchase the right to watch a video with no limits on duration or count.
- Purchase a 30-day subscription to unlock Ultra-HD 4K quality level for all videos (still have to purchase each video separately; only available on high-security devices).
- View purchased rights/subscriptions and cancel an existing subscription (if implemented as auto-renewing).
- Catalog editor can define conditions individually for each product (e.g. video X may only offer possibility to sell for 24 hours; video Y may be available either as 7-day purchase, 1-time purchase or a forever purchase).
- If anything goes wrong (e.g. number of views is over) the user must be shown understandable message about it, ideally with a link to buy more views.

The specific mechanisms of integration are going to be highly specific to the e-commerce platform. Some platforms just allow you to embed JavaScript snippets and require you to host any custom server-side code on a separate site. Some platforms allow you to write custom server-side code directly. Students may choose any popular e-commerce platform that they feel comfortable working with.

The most basic principles of DRM integration are showcased in the Axinom DRM quick start guide. This project will apply these principles and extend them to integration with a real e-commerce platform. Important points will be integration with an identity management system ("who is the user?") and an entitlement catalog ("have they purchased the right to watch this?").
Output

The output shall be published on GitHub as open source software. The students will retain ownership of the software. The students will have the possibility to publish their work as a paid plugin/service for the chosen e-commerce platform.

Nature of the expected work

The execution of the software project will involve:

- Creating code to integrate with the e-commerce platform in order to:
  - Allow an editor to define what purchase options are available for each product.
  - Create the necessary entitlement database entries upon purchase.
  - Supply the user with a link they can use to watch the video (or a list of links and purchases).
  - Create the DRM configuration/authorization data that represents the user's purchases.
- Integration with Axinom DRM web APIs. These APIs will be used by video players. Students will need to prepare JSON license tokens for these APIs, informing the server-side DRM code what the user is allowed to do and under which conditions.
- Integration with video players:
  - Embedding them into a website for playback
  - Providing them video URLs
  - Providing them DRM configuration/authorization data
  - Observing for DRM errors and displaying appropriate GUI elements in response
- Setting up one or more development/testing instances (either as part of locally deployed e-commerce software or as a stand-alone web service integrated into a hosted e-commerce suite) and the relevant continuous delivery pipelines.

Skills exercised

- Moderate/significant web development (depth will vary depending on what the chosen e-commerce platform already does for you)
- Significant web backend and business logic development (to drive all the integrations)
- Moderate "devops skills" to make the code live on one or more dev/test instances using continuous delivery practices.

Test data

Axinom will provide a Windows executable that takes an MP4 file as input and performs all the required processing to transform it into a DRM-protected video that is compatible with all modern browsers/platforms. Students can use this app to create test data in any quantity.
Access to DRM

The DRM client APIs can be freely used on most popular software platforms (Chrome, Firefox, Edge and Android). Axinom may also be able to offer private access to some other platforms (iOS, Xbox) if the project team is feeling particularly ambitious and wants to cover more device types.

Axinom will provide the students free access to the Axinom DRM service, which implements all the required proprietary ("secret") DRM logic and exposes a simple web API for integration. The Axinom DRM service can be used in the context of this project without signing any extra agreements with the DRM technology providers. NDAs between the students and Axinom may be required.

Video playback

There exists free software that is capable of DRM video playback. Recommended players are:

- [https://github.com/google/shaka-player](https://github.com/google/shaka-player)