

eyeQ Bundle Product Overview

Product Version 1.5.0

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Overview

The Gracenote eyeQ Bundle includes the eyeQ, VideoID, and VideoExplore Web APIs. These Web APIs are based on an XML-based HTTP protocol that provides simple, yet highly-functional access Gracenote Media Recognition Service. Using the protocol, client applications send queries and receive responses as XML through HTTP.

Gracenote eyeQ supports Video identification and exploration, and TV IPG (interactive programming guide) functionality. You can use these interfaces to get detailed Gracenote metadata about audio-visual works and TV programs.

TV Listings

Gracenote eyeQ includes a set of TV listing information for North America and Europe. It extends the information provided by typical Electronic Program Guides (EPG) with a set of exploreable metadata. TV listings can be displayed in a UI and browsed by channel and/or date. TV listings include TV programming, TV channel names and logos, and TV channel mapping data that associate TV listings to the TV tuner receiving the TV signal.

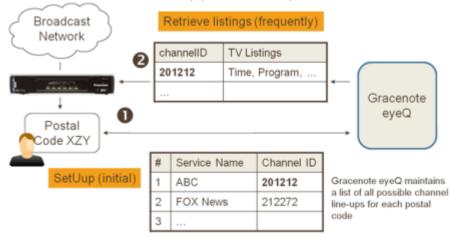
TV Channels

North America

TV sets in North America retrieve channel lineup data based on their location, which is determined by postal code. A typical set-up is:

- 1. The end user provides a postal code.
- 2. The device/application queries Gracenote eyeQ for a list of service providers for this postal code.
- 3. The end user selects a service provider.
- 4. The device/application:
 - 1. Queries Gracenote eyeQ for a TV channel lineup.
 - 2. Save the channel lineup and maps it to the TV tuner.
 - 3. Uses channel lineup to retrieve TV listings from Gracenote eyeQ.

For each TV channel, the lineup provides a unique channel ID, the channel name, and an optional channel logo.

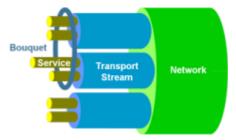


Channel Line-Up for Postal Code XZY

Europe

In the European digital broadcast networks (DVB), channel lineups are determined after a TV channel scan. The channel scan delivers triplet information for each TV channel, which consists of:

- onid: This is the unique identifier for the original network that is transmitting the signal.
- tsid: This is the unique identifier for the signal transponder that is transmitting the signal.
- sid: This is the unique identifier for a video/audio program within the transponder signal.



The device/applications uses the DVB triplet information during the set-up process. A typical set-up is:

- 1. The device/application performs a tuner scan
- 2. The device/application queries Gracenote eyeQ with the list of DVB triplets from the tuner scan.
- 3. Gracenote eyeQ maps the DVB triplet list to a list of TV channels.
- 4. The device/application saves the TV channel lineup.
- 5. The device/application uses the TV channel lineup to retrieve TV listings from Gracenote eyeQ.

Broadcast Retrieve listings (frequently) Network Channel ID TV Listings 0 2008 Time, Program, Gracenote eyeQ Tune for Gracenote eyeQ maintains a list of possible triplets for each channel available Gracenote eyeQ has TV listings for channels Channel Line-Up tvtv ID Channel Name Triplets after scan 1, 166, 72 Service Name Triplet 2008 BBC One 2, 6941, 2050 BBC One 1, 166, 72 1, 181, 86 2015 Channel 4 2 Channel 4 1,,181,86 2, 9205, 2024 Match/Map initial) Channel Mapping Table

Three parts identifying a channel/service

For each TV channel, the lineup provides a unique channel ID, the channel name, and an optional channel logo.

Note

In North America, the default sorting of TV channels is part of the TV channel lineup. European networks usually do not provide a default channel sort order. One exception is DVB's LCN (logical channel numbers). TV manufacturers usually implement their own default sort orders based on top channels in the specific countries. In both cases, viewers can re-sort channels if the implementation provides this ability.

TV Programs

Gracenote eyeQ offers a set of information for TV programs. The set of information provided depends on how listings are retrieved.

TV What's-On-Now Look-up

This look-up allows devices and applications to retrieve TV listing data for a set of channels with a variable time frame of up to 14 days in the future (depends on the TV channel). The returned data will include partial objects for each TV program (see table below) and optionally the TV program image reference as well.

Devices or applications usually use this look-up to display "What's on now/next," such as TV listing information for a set of channels. If a larger amount of TV listing data is required, then what's-on-now batches should be considered.

TV What's-On-Now Batches

Customers using a Service Delivery Platform (SDP) to serve a large network of devices can request special types of TV what's-on-now batches that contain full TV data listings. These batches are for strict use of SDP

customers only and do not include zip code or provider data. Please consult your Gracenote Professional Services representative to learn more about this option.

TV Program Details

For each TV program retrieved via a TV what's-on-now look-up or TV what's-on-now batch, additional information can be requested to fill a program detail screen. The returned data will include a detailed TV program object (see table below), which contains the schedule-independent data of a TV program.

TV Program Data	Partial	Details
Unique ID (GN ID)	Yes	Yes
Group Reference	Yes	Yes
Production Country, Year and Type	Yes	Yes
Episode Number, Season	Yes	Yes
Program Category	Yes	Yes
Title	Yes	Yes
Original Title	No	Yes
Subtitle	Yes	Yes
Listing Text	Yes	No
Synopsis	No	Yes
Contributors	No	Yes
Image reference	Optional	Yes
Channel, Start and End time	Yes	No
Rating	Yes	Yes
Viewing, Audio, Video and Captioning attributes	Yes	No



Some fields may not apply or be available for each program.

Search and Explore

In addition to TV channel and date/time based retrieval of TV listing data, Gracenote eyeQ also allows the viewer to search TV program listings, and explore TV programs based on Gracenote Video Explore technology.

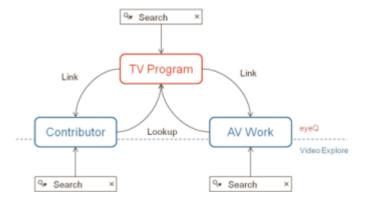
Text Search in TV Listings

Gracenote eyeQ enables search of TV program titles by TV channels. The returned data will include partial objects for each TV program (see table below) and optionally the TV program image reference as well. This search option is beneficial for devices or applications which perform what's-on-now look-ups to present TV listings. Devices and applications which use what's-on-now batches and local storage of EPG data will usually perform search against a local index and can include more data elements into search if required.

Contributor and AV Work Associations and Look-Ups in TV Listings

Gracenote eyeQ is integrated with Gracenote Video Explore, which can provide:

- Associations from TV programs to both Contributors and Works
- TV program look-ups using Contributors and Works



Associations in TV programs allow the viewer to start a Video Explore experience for Contributors (Cast and Crew) and related Works. This greatly extends the experience of browsing TV listings. For example, viewers can find out more details about actors featured in a TV movie or series or browse information about additional episodes of a TV series.

When available, Gracenote eyeQ also provides paths to get back to TV listings by using the same relations in reverse. This includes the look-up of upcoming TV programs for a certain Contributor or upcoming airings for a movie or TV series.

Video Search and Exploration

Gracenote Video Explore is comprised of 3 main entities: Products, Works, and Contributors. A clear understanding of the overlaps, differences, and relationships across each entity is essential to getting the full benefit of Video Explore.

Product

A Product refers to the commercial release of a Film, TV Series, or video content. Products contain a unique commercial code such as a UPC, Hinban, or EAN. Products are typically released on a physical media format,

such as a DVD or Blu-ray.







Product: Film on BD



Work

A Work refers to the artistic creation and production of a Film, TV Series, or other form of video content. The same Work can be released on multiple Product formats across territories. For example, *Batman: The Dark Knight Work* can be released on a Blu-ray Product in multiple countries. A TV Series, such as Lost, is also a Work. And each individual episode of a Series is also a unique Work. Although the majority of Works are commercially released as a Product, not all Works have a Product counterpart. For example, a TV episode which airs on TV, but is not released on DVD or Blu-ray is considered a Work for which no Product exists.



Lost : TV Series



The Dark Knight

Contributor

A Contributor refers to any person who plays a role in a Work. Actors, Directors, Producers, Narrators, and Crew are all considered a Contributor. Popular recurring Characters, such as Batman, Harry Potter, or Spider-man, are also considered Contributors in Video Explore.



Contributor: Director, James Cameron



Contributor: Actor, Christian Bale



Contributor Character, Batman

Video Explore Entry Points

A Video Explore experience starts with Text Identification (text search) on selected data fields of Products, Works or Contributors. The following text search options are available in Video Explore:

- Product Title
- Work Title
- TV Series Title
- Contributor Name

Text Identification

Text string identification is made possible on selected indexed fields such as Work Title, Contributor Name, and Character. Identification of a Product, Work, or Contributor via a text string retrieves related video metadata such as Synopsis, Cover Art, and Cast & Crew billing without the dependency of a TOC (DVD/BD).

Available Work Text Search Fields

Field	Description
Work Title	Work Title Text queries enable a user to retrieve metadata of a specific Work such as "The Dark Knight" feature by matching the Work Title text string and Gracenote Work ID's associated with the Work. As mentioned before, a Work refers to the artistic creation and production of a Film, TV Series, or any available video content.
Works	As of May 1, 2012 Gracenote has the following coverage in its Media Database:
Coverage	US – over 1,000,000
	France – over 67,000
	Germany – over 64,000
	Italy – over 41,000
	UK – over 1,000,000
	Japan – over 50,000
TV Series Search	TV Series text queries enable a user to retrieve metadata of a TV Series at the Work level, such as "30 Rock," by matching the TV Series Title text string and Gracenote Work ID's associated with the Work. This capability extends the TV series metadata available for TV content since the user is then able to search for a TV Series that has not been commercially released as a Product.

Available Contributor Text Search Fields

Field	Description
Contributor Name	Contributor Name Text queries enable a user to retrieve metadata of a specific person who plays a role in a Product or Work. Actors, Directors, Producers, Narrators, and Crew are all consider Contributors. Matching a Contributor text string and associated Gracenote ID initiates a Video Explore event based on an Actor or other Contributor search input. This allows a user to learn more about a specific person from a Work as well as browse the Contributor's filmography.

Video Descriptor System

The Gracenote Video Descriptor System is comprised of hierarchical taxonomies containing all the granular descriptive attribute names and unique ID #s that Gracenote uses to describe film, TV, video and web audiovisual content. The system was designed to leapfrog past the numerous issues that plagued existing commercial deployments and industry standards for video description – to create a far more powerful solution differentiated by a highly normalized structure, consistent levels of granularity, comprehensive descriptive vocabulary, intelligent organization via descriptor types and hierarchies, and a global design perspective.

Currently, there are 12 descriptor types. Video Genre is one of them. There are nearly 3,000 unique controlled vocabulary values contained across these descriptor types. Each work may be annotated with multiple values for each Descriptor Type (for example, 3 genres, 6 Topics).

The system has also been designed to accommodate the use of novel tags that are mapped, and as appropriate, integrated, into the structured taxonomies over time, providing a smooth integration from the world of open folksonomies to the structured metadata required for many commercial applications.

The system design also enables fluid mapping of 3rd party taxonomies as well as generation of alternate browse hierarchies for different UX use cases, without the need to alter the source annotations or value lists. The Video Descriptor System can be used to help enable a variety of use cases including. media recognition, navigation, search, taste profiling and personalization, community functionality, recommendations, and channel programming.

In addition, the Gracenote Video Data Model includes structured taxonomies for many other, more factual, video attributes that are assigned to video works.

Video Descriptors

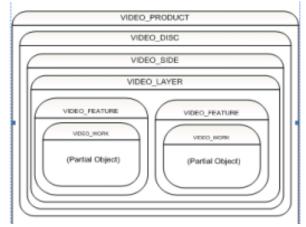
Category	Video Descriptor	Supported by eyeQ	Example
Audience and Perception			
	Audience	No	Children / Women / Latin-American / Christian
	Reputation	No	Cult, Classic, Bomb
Style and Technique			
	Video Mood	No	Bittersweet, Campy, Downbeat, Warm
	Style	No	Surrealism, Mondo, Art House, Neo-Realism
Content			
	Source	No	Novel, Comic Book, Myth
	Setting: Physical Environment	No	Prison, High School, Skyscraper, Heaven
	Setting: Actual Location	No	Texas, Paris, Empire State Building, Japan
	Setting: Time Period	No	70's, Early 1700's, 1987, Pre-History
	Video Genre	Yes	Action, Comedy, Drama, Sci-Fi, Educational
	Scenario	No	Class Conflict, Hostage Situation, Mistaken Identity
	Story Type	No	Rise and Fall, Cinderella Story, Buddy Picture
	Topic	No	
	Event	No	WWII, Wedding, Vacation, Christmas
	Activity / Sports	No	Poker, Travel, Yoga, Baseball, Hunting, Mountaineering
	Character	No	Clown, Cop, Beatnik, Gangster, In-Law, Mermaid, Genie
	Condition Physical / Mental	No	Blindness, Amnesia, Alcoholism
	Inanimate Thing	No	Motorcycles, Bridges, Toys, Telephones

	Living Thing	No	Birds, Sharks, Horses, Dinosaurs, Plants
	Practices / Fields	No	Fashion, Food, Anthropology, Agriculture, Politics, Islam
	Personal Situations	No	Family Dysfunction, Infidelity, Adolescence, Midlife
	Issues	No	Organized Crime, Immigration, Gender Issues, Poverty
Other Video Attribute Examples:			
	Aspect Ratio	Yes	
	Color Type	No	
	Production Country	No	
	Language	Yes	
	Rating system	Yes	
	Rating	Yes	

Video Explore (Work and Contributor) Conceptual Data Object Model

A user can to navigate from the Video Product Object to the AV Work to initiate a Video Explore event. Contributor metadata cannot be accessed by the application directly from the Product, although the Credit listing is available in each Feature in the Product. The application must navigate from the Product Object, to the Work Object, to the Contributor object to retrieve the relevant Contributor metadata.

Product to Work Navigation



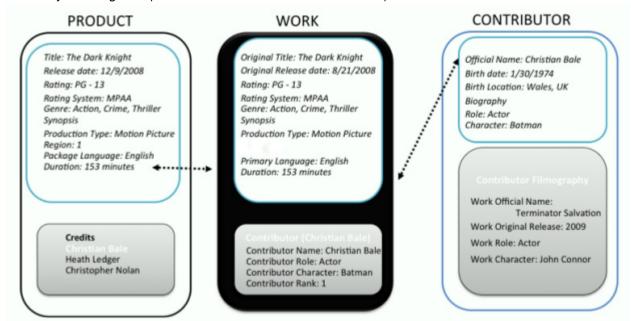
AV Work Objects

The AV Work Object contains all the main metadata of the queried Work. This includes the general fields at the Work Level that are also available in the Product Object such as: Title, Rating, Release Date, Duration, etc. The Work Object may share many of the same fields found at the Product level, but it also contains fields unique to the Work itself, that do not exist at the Product level, such as Contributor data.

A user is able to navigate from the Work Object, to either the Product Object or the Contributor Object in order to initiate a Video Explore event. Navigating to the Product Object from the Work allows an application to retrieve all Products related to the Work, this is important if a user is interested in linking to a 3rd party commerce site such as Amazon.com to purchase a DVD or Blu-ray Product after a Work Query.

As mentioned previously, the Work Object also contains the Contributor Cast & Crew listings of the Work. An application is also able to navigate from this Contributor listing to a specific Contributor Object, allowing the end user to retrieve information about a certain Cast or Crew member of the Work. Once the Contributor Object is accessed, the user is able to browse information unique to the queried Contributor such as the Filmography.

Work Objects also contain the Contributor listing of the Work in order to enable navigation from the Work to a Contributor of the Work. Contributor Partial Objects which exists in the Work Object for disambiguation include: Contributor Name, Contributor Role, Character, and Rank.



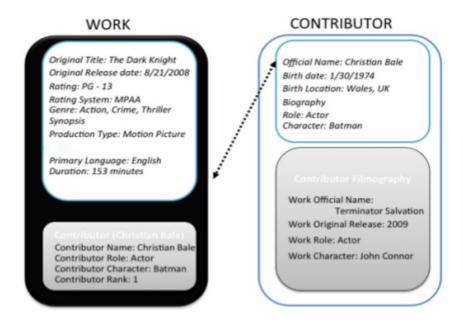
Work Object Navigation (Work to Product or Work to Contributor)

Contributor Objects

The Contributor Object contains all the main metadata of the queried Contributor. This includes the Works available from the Contributor's filmography.

A user is able to navigate from the Contributor Object, to a Work from the queried Contributors filmography in order to initiate a Video Explore event. Once an application navigates from the Contributor Object to a Work from the Contributor's Filmography, the end user is able to retrieve all the Work level metadata for that Work. The end user can also continue to navigate from the Work object to the Product object in order to link to a commerce event via a third party such as Amazon.com.

Contributor Object Navigation (Contributor to Work)



AV Work Partial Objects

Work Partial Objects allow for disambiguation between unique Works that have identical Work Titles. For example, if a the Work title for *Casino Royale* returned two Works with the same title, partial objects such as Release Date, Duration, or Production Type fields could be referenced in order to select the correct Work title before delivering the related metadata. The ability to retrieve Work Partials for identical results allows an application to minimize the amount metadata returned until the correct result is selected. Once the correct Work is determined, the full data set can be queried and returned for use by the application.

AV Work Partials include:

Field	Description
Title Display	The Title of the Work to be displayed in an application (this can vary from the Original title based on location/language)
Genre	The categorization of a Product feature or Work based on the Gracenote Video Genre System
Production Type	Description of the Programming format of a Product or Work such as Motion Picture or TV Series
Original Date	The Original release date of the Work
Duration	The length of the Work measured in seconds
AV Work Type	Two AV Work Types currently exist Audio or Video

Contributor Partial Objects

Contributor Partial Objects allow for disambiguation between unique Contributors with identical Contributor Names. For example, if a Contributor Query returned two results with the same name, partial objects such as Role could be referenced in order to select the correct Contributor. The ability to retrieve Contributor Partials for identical results allows an application to minimize the amount metadata returned until the correct result is selected. Once the correct Contributor is determined, the full data set can be gueried and returned for use by the

application.

Contributor Partials include:

Field	Description
Name	Name of the Contributor, such as Christian Bale
Role	The Contributors function such as Actor, Director, Producer
Character	The figure portrayed by a Cast member in a Work such as Batman

Link and Enrichment Objects

Product Link and Enrichment Objects

Once the Product object has been queried, an application can link to enriched content via the Link object. The currently available Link content relevant to the Product Object includes: Cover Art and 3rd Party commerce links (such as Amazon ASINs). This link functionality enables the Cover Art for an identified Product to be displayed as well as linked to 3rd party commerce links to purchase the recognized product.

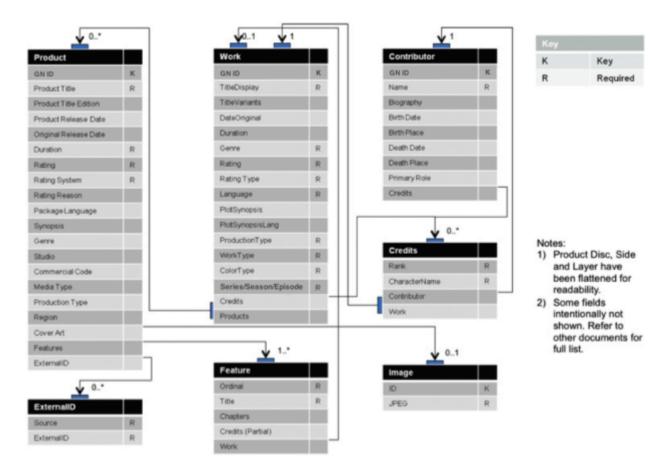
AV Work Link Objects

Once the AV Work object has been queried, an application can link to enriched content available at the Work level via the AV Work Link object. The currently available Link content relevant at the AV Work Object includes: Internet Video Archive Trailers and VOD (Video On-Demand) catalogs. This link functionality enables the trailer for an identified Work to be accessed and viewed through an application. Amazon DVD/BD links are not directly available via the Work Link. In order to access a DVD/BD Amazon link from the AV Work, an application must first navigate to the Product of the AV Work in order to link to the Amazon DVD/BD for purchase. The VOD catalogues are matched to GN ID at the AV Work level.

Contributor Link Object

Once the Contributor object has been queried, an application can link to enriched content available at the Contributor level via the Contributor Link object. The currently available Link content relevant in the Contributor Object includes Images. This link functionality enables the image of an identified Contributor to be accessed and

viewed by the application.



Product Metadata Fields for Video Explore 1.0

Available Product Metadata	Description	Example
Product Title	Products may have the same title as the related Work, such as The Dark Knight, or the Product title may be specific to the released Product, such as The Dark Knight: Widescreen.	The Dark Knight
Product Title Edition	A Product may also have an unique Edition derived from the same Work, such as The Dark Knight: Special Edition or The Dark Knight Collector's Edition which is captured by the Product Edition field. Not all Products will have a Product edition field populated.	The Dark Knight: Special Edition
Product Release Date	Product Release Date refers to the date a specific Product was released. The Product Release date for a DVD or Blu-ray from the same Work will have different Product Release dates, unless both the DVD and Blu-ray were released on the same exact date. Original Release Date refers to the release date of the Work to which the Product is tied to. YYYY-MM-DD is the default format for Release Dates. The application is free to read the date and transform into any preferred format.	9-Dec-08
Duration		

	The total length of time for all features on a Product. A Product is comprised of multiple features on a disc. Examples of a feature include: Main, Episode, Extra, and Reserved.	153 minutes
Rating	Rating is assigned at the Product level and is determined by the respective Certification Board of each country or region. Ratings are defined Video List Values.	PG-13
Rating System	Each country or territory also has a unique Rating System which determines the Rating assigned. For example, Products released in the U.S. follow the MPAA Rating System, where Ratings such as: G, PG, PG-13, and R are assigned to a released Product. Rating Systems are defined Video List Values.	MPAA
Rating Reason	Rating Reason is a short textual explanation as to why a particular Rating was assigned to a Product, such as "Scenes of Violence" Work Ratings are derived from the union of all existing Product Ratings. An application is able to select the relevant Work Rating based on the complete Product Rating list.	Intense sequences of violence
Aspect Ratio	The ratio of the width of the image to its height. Various Apect ratios exist such as: 4:3 (standard); 16:9 (High Definition)	Anamorphic 2.35
Product Note		
Synopsis	Short summary outlining the main storyline for a Product or Work	
Genre	Each Feature on a Product is assigned a unique genre. Multiple Genres can be assigned to the main feature of a Product or Work by our editorial staff	Action, Crime, Thriller
Number of Discs		1
Commercial Code	The unique code give to a specific release of a product and varies across territories. Examples of commercial codes include: UPC, Hinban, and EAN.	UPC/GTIN
Commercial Link		
Cover Art		
Media Type	The format of the Product. 2 Media Types currently exist for Video: DVD and Blu-ray.	DVD/BD
Production Type	The programming format of a Product or Work. For example, Motion Picture or TV Series are examples of Production Type. Production Type is a defined list value for Video Explore. For a detailed listing of the list values for Production type please see the Video List Section in this document.	Motion Picture
Region	The code assigned to DVD or Blu-ray based on the territory of the Product release	1
Link and Enrichment		
	DVD/BD Cover Art	
	Amazon.com DVD/BD	
Product Partial Object		
	All Fields prior to the Feature Level are included in the Product Partial	

AV Work Metadata Fields for Video Explore 1.0

Available Work Metadata	Description	Motion Picture Example
Work Official Name		The Dark Knight
Original Release Date		21-Aug-08
Duration	The entire length of the Work itself	153 minutes
Rating		PG-13
Rating System		MPAA
Rating Reason		Intense sequences of violence
Production Type		Motion Picture
Synopsis		
Genre		Action, Crime, Thriller
Work Image		
Cast and Crew	Freeform text (no IDs)	
Contributor Name		The Christian Bale
Contributor Role		Actor
Contributor Character		Batman
Rank		

Cast and Crew Metadata Fields for Video Explore 1.0

Core AV Work Objects also contain the Contributor listing of the Work in order to enable navigation from the Work to a Contributor of the Work.

Contributor Partial Objects, which exist in the AV Work Object for disambiguation include Contributor Name, Contributor Role, Character, and Rank.

Available Work Metadata	Supported by eyeQ	TV Example
Work Official Name	Yes	The Beginning of the End
Keep Sortable Title Field	Yes	
Original Release Date	Yes	1/31/2008
Duration	Yes	Length of the specific Work
Rating	Yes	PG-13
Rating System	Yes	MPAA
Rating Reason	Yes	Intense sequences of violence

Primary Language	Yes	English
Production Type	Yes	TV Series
Synopsis	Yes	
Genre	Yes	Drama
Series Title	Yes	Title of the TV Series, such as Lost
Season Title	Yes	
Episode Title	Yes	The Episode Title. Episodes are part of Seasons. Episodes are Works and can link to commerce (Amazon, Netflix, etc.). Example: The Beginning of the End
Cast and Crew	Yes	
Work Image	Yes	
Contributor Credits	Yes	
Contributor Name	Yes	JJ Abrams
Role	Yes	Executive Producer
Character	Yes	
Rank	Yes	
Link/ Enrichment	Yes	
Work Trailers	No	IVA

Contributor Metadata fields for Video Explore 1.0

Available Contributor Metadata	Supported by eyeQ	Example
Official Name	Yes	Christian Bale
Birth Year/Date	Yes	1/30/1974
Death Year/Date	Yes	
Birth Location	Yes	Haverfordwest, Pembrokeshire, Wales, United Kingdom
Death Location	Yes	
Biography	Yes	
Contributor Role	Yes	Actor
Genres	Yes	
Link/ Enrichment	Yes	
Contributor Images	Yes	Getty Image

Example Video Explore Session

A typical Video Explore session in an implementation may look like this:

- 1. The user queries service for a Work.
- 2. The Work is formatted and displayed to the User.
- 3. The Work displayed contains hyperlinks to Contributors.
- 4. The User selects a Contributor hyperlink.
- 5. A query is initiated for the Contributor.
- 6. The Contributor response is formatted and displayed to the user.
- 7. The Contributor displayed contains hyperlinks to other Works the Contributor has participated in.
- 8. The user selects a Work hyperlink.
- 9. When viewing a work, the user can see if and when it is playing on TV.
- 10. When viewing contributor, the user can see if and when a work featuring that contributor will be played on TV.
- 11. When viewing TV listings, in addition to basic metadata about the TV Program, information about contributors referenced in the credits can be retrieved. From this, the user can 'explore' from the contributor, finding other Works or upcoming TV appearances featuring this contributor.
- 12. If the TV Program is an episode of a series, information about the series can also be retrieved.

Deliverables

Developers Kit

- · Reference application binary for Windows and Mac.
- Reference application source code, including Windows Visual Studio project files.

Documentation

- Release Notes
- Reference Application Guide
- Implementation Guide
- UI and Data Model Guides
- API Reference Guides
- Gracenote Video Branding Requirements

Web API Deployment Options

The video component of Web Services has the following query types:

- Work, Contributor, Series and TV Listings text search
- Video Explore and IPG navigation queries:
 - Retrieve Works from Products
 - Retrieve Products from Works

- Retrieve Contributors from Works
- Retrieve Works from Contributors
- Retrieve TV Programs from Works
- Retrieve TV Programs from Contributors
- Retrieve Works from TV Programs
- Retrieve Contributors from TV Programs
- Retrieve Series from TV Programs
- TV Episode Works can be grouped in to Series and Season objects
- EPG Data
 - Retrieve live TV listings for current and upcoming TV Programs
 - Retrieve TV listings for TV Programs playing on a users TV channel line