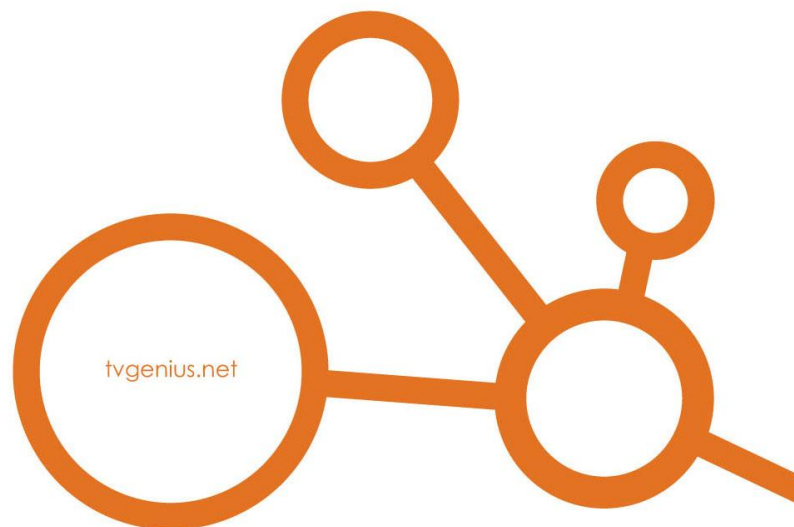




Next Generation Mobile TV Guides



Introduction

Over the last ten years, mobile devices have come from nowhere to being a ubiquitous part of modern life: many European countries now have more mobile phones than citizens and the evolution from talk, to text, to the mobile internet is now an established part of many people's lives.

The most successful categories on mobile are social applications, entertainment, videos and information services. TV services fall squarely into the middle of these categories providing a service on mobile devices that is both popular and relevant for many mobile-phone users.

However, mobile TV guides have historically done little more than duplicate the functionality of a TV listings magazine on the mobile phone, with little added value to the business, and disappointing revenues. It has not been until the last few years that a new generation of mobile TV guides have emerged with rich functionality and direct integration with content services that has driven a revival in the sector.

This white paper examines the additional functionality that has emerged and how this can best be delivered in services that drive user loyalty, increase usage and enhance revenues for the service provider.

Market drivers for a Mobile TV guide

Most businesses launch a mobile TV guide as an additional revenue stream, funded by advertising on the site or by the sale of additional items around the TV guide, or increasingly by the sale of a downloadable application. The main market drivers are:

- **Increased consumer demand** – the latest generation of mobile phones is massively popularising the use of mobile-optimised internet sites and applications. Users expect to be able to obtain the same information on their mobile phone that they get on the internet.
- **Supporting mobile video** – mobile TV and video applications have widespread take-up with services direct from broadcasters and content owners now beginning to target the mobile market. The fastest growing segment of this is the “catch up” TV experience which allows users to view shows they missed last night on their mobile phone.
- **Take up of personal video recorders (PVRs)** – it is well documented how PVRs can change people's viewing habits, and they also create a driver for mobile services as people want to be able to remotely schedule recordings on their PVRs from their mobile phones.
- **Demographic targeting** – the people who use the mobile internet are frequently high-spend consumers, such as iPhone users, or demographic groups that cannot otherwise be targeted through the internet, including teenagers and students. Many advertisers will pay over-the-odds rates to reach these consumers.

Key Challenges

There are substantial challenges in delivering any TV guide service. A mobile TV guide has significant complications:

- **Supporting multiple devices** - the complexity of mobile devices has increased exponentially along with their popularity. When data services were first made available with Wireless Application Protocol (WAP) in 2000 there was a single standard but any developer now needs to program for 30 or more different browsers on 10 operating systems, as well as supporting the requirements of different application stores. This can be substantially reduced if a service is only targeted for a small range of devices.
- **Imperfect metadata** – TV listings data is by its nature imperfect. Any TV guide needs to take account of this: the latest football match may not be tagged as football and would certainly not be tagged soccer and football. Users who are quickly looking for something should be able to find the show even if the metadata is not 100% reliable.
- **Integration with PVRs and Mobile Video** – the most compelling functionality is also some of the most difficult to deliver with substantial data synchronisation issues required to provide a seamless service
- **Supporting applications and browsers** – the complexity trend has continued with Apple's iPhone which has now made the natively developed applications a more compelling user experience and further complicated the environment for anyone looking to launch a mobile TV guide.
- **Dynamic search** – most search engines are designed to operate on a relatively static dataset and prioritise the most relevant results. In a TV environment, where shows are constantly expiring and different channels have different importance, this is hard. Search results should always display the most relevant result first and never display shows that have already finished, unless they are available to watch on a catch-up service.
- **Personalisation** – a mobile device is fundamentally personal and a compelling service needs to make it easy for a user to store what they have looked at and quickly build a personal guide to reflect their interests, with both shows that the user has rated and also recommendations for other shows that the user might be interested in

Elements of a Successful Mobile TV guide

Key to the success of a Mobile TV Guide is helping the user to find shows that they are interested in watching and then transferring them through to watch them directly, or programming a recording on their PVR back home

This can be split down into three different areas:

- Find something to watch at a certain time
- Finding a specific show
- Handling on demand content
- Linking through to watch a show on their phone or record it on their PVR at home

An effective mobile TV guide provides support for each of these three activities, and because the users' phone is personal, it should also remember what users have done so that when they return to the phone a second time it is easy to find elements that they have previously found. This can take the form of saving searches, favourite channels and shows and should ideally be integrated with mobile messaging such as email, MMS, or SMS.

Finding something to watch

Researching the usage of TV guides across Europe, more than half of the people who use a service are viewing shows that are on within the next two hours of their search. The majority of the remaining visits are for shows on within the next two days.

With this in mind, a key function is to provide access to shows that are available to watch now. With a mobile device that supports native applications, this can be provided using a grid style view as is commonly seen on the set top box.

This is shown in Figure 1 and is certainly a familiar approach. However, because of the small size of mobile devices' screens, it is necessary to provide additional functionality to filter down the channels and provide a reduced set of information if the user is only interested in, say, sports or films.

An example of a reduced grid showing only sport is shown in Figure 2.

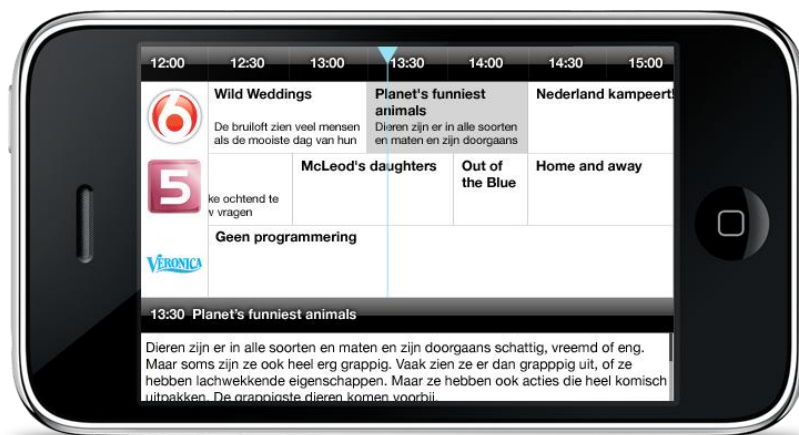


Figure 1 - A mobile TV guide with a traditional grid

	Wimbledon 2009						
	Yesterday at Wimbledon	Wimbledon 2009					
	Used Car Roadshow						
	Wimbledon 2009		Wimbledon 2009				
				Pimp My Ride	Pimp My Ride		
				Pimp My Ride	Pimp My Ride		
	Live Cricket						
	Live European Tour Golf		Barclays Premier League World	Trans World Sport	IAAF Athletix Weekly	Live European To	
	Aerobics: Oz Style	Racing News	Ocean Adventures	IAAF Athletix Weekly	Race World	Ocean Adventures	Live International Cric
	National Rugby League			Darts: Las Vegas Classic			
				Football Today			
	British GT		Wheelies	European Superstock Championship	World Superbike and Supersport		

Figure 2 - A reduced grid showing only sports

For devices that do not support native applications, it is not realistic to render a grid in a typical mobile browser and a more sophisticated approach needs to be taken.

This can include a single list showing what's on now and next on the user's favourite channels, the most popular channels, critic's choices (as shown in Figure 3) or a list of shows of a specific genre (Figure 4).

Tipps



Reiten: CHIO Aachen
Springen: Preis von Nordrhein-Westfalen...[more...](#)
Heute um 15:00 Uhr auf EUROSPORT
Ausserdem: mindestens [9 andere Folgen](#).



logo!
Nachrichten für Kinder
:Kategorie: [more...](#)
Heute um 15:50 Uhr auf Kika
Ausserdem: mindestens [1 andere Folge](#).



Auf geht's zum Frundsbergfest
Großes Mittelalter-Spektakel
:Alle...[more...](#)
Heute um 19:45 Uhr auf BR

[Vorwärts >](#)

Figure 3 - Critics Choices



Die Nanny
Die Familienschlacht.
Originaltitel: A Fine...[more...](#)
Heute um 08:15 Uhr auf Vox
Ausserdem: mindestens [29 andere Folgen](#).



Scrubs - Die Anfänger
Meine Eselsbrücken.
Originaltitel: My Identity...[more...](#)
Heute um 09:40 Uhr auf Pro Sieben
Ausserdem: mindestens [22 andere Folgen](#).



Eine schrecklich nette Familie
Mein Hund hat Kredit.
Originaltitel: Master the...[more...](#)
Heute um 10:55 Uhr auf Kabel Eins
Ausserdem: mindestens [21 andere Folgen](#).

Figure 4 - Comedy Shows

Finding specific shows

The most common question beyond “what can I watch now” is how to find out when a specific show is on. This is not just a matter of finding the show times for CSI, as it could be a film that a friend has recommended starring Brad Pitt, or even an upcoming football match.

The results in Figure 5 show a search for CSI. Note here that only a single episode of each CSI series is listed, with links down to each subsequent episode. This allows easy navigation through a large set of search results on a mobile device.

MOBILE EPG

Wednesday 08. July

1 to 5 of 5 shows matching csi

CSI: Miami
Won't Get Fueled Again: An investigation into an alleged petrol-siphoning operation, seemingly organised by villains determined to cash in on a fuel shortage, exposes the activities of a crook with far darker and more sinister motives. Drama, starring David Caruso, Emily Procter and Adam Rodriguez
Detective/Thriller
Friday 10th July at 23:00 on Five
Also: at least [9 other episodes](#). SUB

CSI: NY
Turbulence: Mac uncovers a murder on board a commercial flight from New York to Washington DC and sets up a makeshift crime lab to catch the killer. The case takes an unexpected twist with the discovery that the victim, an escaped convict with a history of drug smuggling, was posing as a Federal Air Marshal to smuggle cash out of the country
Detective/Thriller
Tuesday 14th July at 22:00 on Five
Also: at least [5 other episodes](#). SUB AD

CSI: Crime Scene Investigation
The Happy Place: A woman falls to her death from a balcony, and Nick later learns she was due to be married but had recently lost her job at a bank over accusations she stole \$10,000. Grissom hunts the killer of a school guidance counsellor, and former CSI Sara appeals for leniency in the case of a man accused of murdering his comatose wife. Sam Murphy and Bruce Weitz guest star

Figure 5 - A search for the show CSI

Similar results should be displayed for more generic searches for sports or actors, with particular attention given to ensuring that the first few results in the list are the most relevant.

Living with Imperfect Metadata

Although the TV industry is constantly striving towards metadata that perfectly matches the broadcast stream, we are a long way away from this and innovations such as Video-on-Demand (VoD) and catch-up content are further muddying the metadata waters.

Most of these problems are fundamentally unsolvable and one can only look to implement a system that works around these problems as far as possible without degrading the user experience.

The first basic problem is knowing what the programme is meant to be. Frequently broadcasters provide inaccurate information on the shows they are planning to broadcast, or simply specify the wrong episode of a syndicated series.

The second problem is obtaining accurate information for the programme. For high profile syndicated series, the contents of the show are well understood and a description for an episode of CSI is unlikely to be inaccurate. But a reality-TV or sports programme may frequently contain inaccurate information on the players involved. Further problems are frequently about categorisation – should a programme be “factual” or “entertainment” or “reality TV” or all of these categories?

The final problem relates to schedule changes. This can range from minor delays due to a sporting event overrunning to a complete change of an entire evening’s programming on all channels when a major public figure dies or a unusually newsworthy event occurs. Any content-discovery platform needs to be able to ingest these schedule changes at the last minute and ensure that the TV guide information is always completely up to date.

Where remote-control functionality for PVRs is included, this is further complicated by the fact that the published metadata needs to be kept in synchronisation with the metadata on the set-top box in order to achieve accurate remote control. And any schedule changes to the PVR may only be rolled out at a different time from the updates in the content-discovery platform.

The key point about metadata is that any scheme which relies on highly accurate metadata is prone to error. The best systems will be able to ingest inaccurate metadata and publish a TV guide that the user can understand and accept as accurate without highlighting the inadequacies of the original data source.

Handling On demand Content

On demand content does not lend itself to the traditional time and channels views and more focus should be given in a mobile environment to recommendations based on user's known preferences. This can be implemented through basic ratings systems or a favourite shows list.

In either approach, the user should be presented with a list of on demand content that matches their preferences and a set of recommendations for other content that they might be interested in.

This can be further extended in a social media environment to include shows that their friends are watching, or recommendations based on similar individuals.

Watching Video and Remote Recording

The real money in mobile TV guides is in what the user can do once they have found a show.

Remote recording is the first killer application: the user is out and about, hears about a TV show that they want to watch but they realise they will not get home in time to watch it. Rather than calling home and asking someone to video it, with a PVR and a mobile phone they should be able to find the show on their mobile phone and then remotely programme their PVR to record it at home.

The second killer application is watching TV shows directly on the phone. With mobile video becoming more prevalent, and especially catch up services, people can now search for a show that they missed last night and watch it on their mobile phone on the way into the office in the morning.

Both of these applications require that the TV guide application has up to date information on what programmes are available to watch or record.

For remote recording, the challenge can be more substantial because the metadata used for the mobile TV guide needs to be up to date with the metadata on the set-top box. Frequently these boxes have out of date or old metadata and some level of mapping may be required to match up a show that the mobile phone user wishes to record with the actual show on the set-top box.

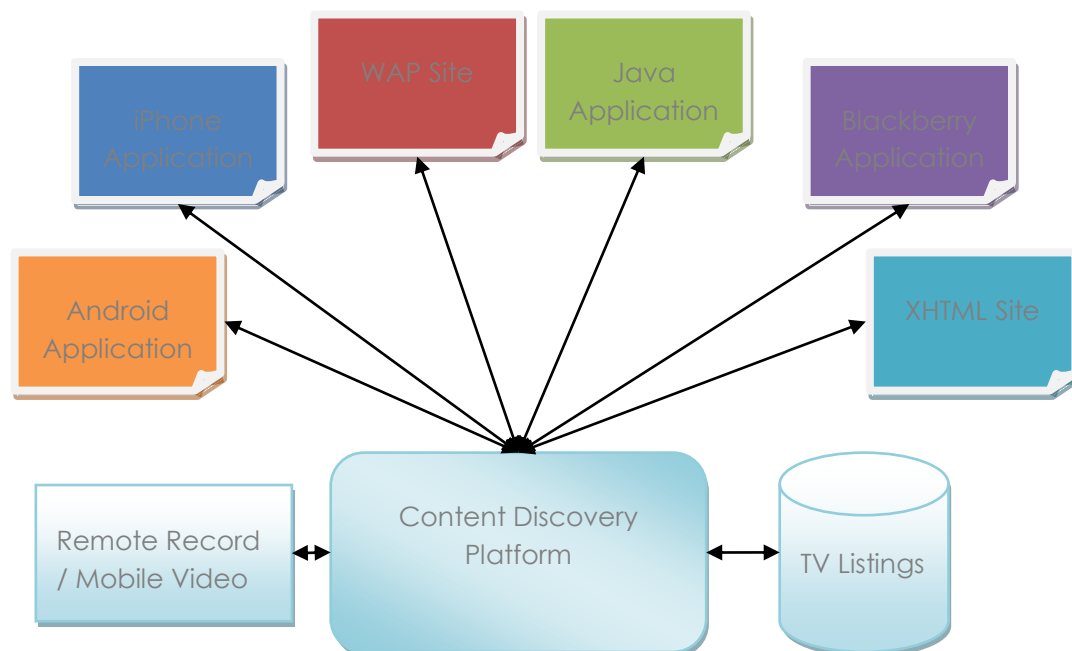


Using A Content Discovery Platform

Using a single Content Discovery Platform (CDP) as a basis for developing mobile TV guides allows the user experience to be optimised for each different device in the chain. This maximises user take-up and revenues without the overhead of having to build a new application from scratch for each different device.

Ensuring a consistent user experience, even when the actual front end may be developed in a completely different environment, requires a common back end, which further means that the complex integration with remote recording and mobile video services only needs to be implemented once.

Typically, the CDP will offer the core-data aggregation, search, recommendations, and personalisation functionality in a single element, with multiple applications developed on the top of the this platform:



The CDP therefore needs to provide a standard interface that can be used by all of the services to provide the functionality, including search, personalisation, and recommendations.

Features of a content discovery platform

The CDP needs to encapsulate all of the logic and functionality of the TV guide in a separate layer from the presentation functionality for each device.

- **Core TV guide functionality** – any CDP must provide a simple way to extract listings information to be displayed in a list, a grid, by time, channel or by category. Further functionality should include extracting listings broadcast in high definition or with subtitles or those that are particularly recommended.
- **Search** – more sophisticated functionality should include the ability to search for specific programmes, actors, sports etc. Typically multiple episodes and

repeats should be filtered out of the search results with only the most relevant shows appearing.

- **Personalisation** – as a minimum, users should be able to specify their favourite shows and channels, with more sophisticated personalisation facilitating saving any search for an actor, a category or a sport. The CDP should also integrate easily with any single sign-on system so that users do not need to log in to each mobile TV guide separately.
- **Recommendations** – most CDPs include some functionality to recommend shows on the basis of other shows that the user watches. This is particularly important for mobile-TV and video services, where relevant content from the mobile service can be promoted from scheduled TV.
- **Remote services** – remotely scheduling recordings on a PVR and linking to mobile video are the key applications for a mobile TV guide. Any platform needs to be easily integrated with any systems required to facilitate this.
- **Easy to implement API** – many CDPs provide only basic APIs and it is important that the API is both feature-rich and simple to implement. XML based APIs are the easiest to interface with most rendering platforms and the functionality of the API needs to reflect all of the key functionality of the TV guide.

Key benefits

The main advantage of using a central CDP is that the core functionality described above is encapsulated in a single system while the presentation layers handle the different display options:

- **Best of breed** – the supplier best placed to provide an iPhone application may not be best placed to run an off-portal WAP service. The CDP ensures that the complexity of running a TV guide is not passed on to the application developers who can each focus on their areas of expertise.
- **Consistency** – the user will receive the same service regardless of the platform that they are using: search results, recommendations and personalisation will be common. The only difference will be device-specific attributes such as screen size and more advanced layout functions.
- **Speed to market** – clearly the functionality contained within the CDP would need to be replicated if any services are going to be launched without using a CDP. Therefore using a CDP gives is a substantial time to market improvement.
- **Reduced maintenance** – as TV evolves, new channels and services only need to be updated at a single point. New services and channels can be added to the CDP and automatically updated in mobile-client applications and mobile-internet sites without the need for code changes in the applications.

What to look for in a solution provider

There are many providers of content-discovery platforms in the TV industry, mostly from either a web- or a TV-oriented background. The following are some of the criteria that can be used in choosing a CDP:

✂ How easy is it to configure different user interfaces?

Many CDPs are little more than another product provided as a white-labelled service. Make sure you can see a number of different examples of services developed using the platform, and that each of them has substantially different user experiences.

✂ Have they already delivered live services in your language?

Television is the ultimate local content and you should look for a platform that already has a track record of delivering in your local language. Otherwise you run the risk of debugging the platform on behalf of the supplier.

✂ Do they already have an API that you can trial?

Make sure you get early sight of the API documentation and can trial it. If you can't quickly build a trial service then it will probably take a substantial amount of time and investment to build a live service.

✂ Can the same CDP be used for web and set-top box services?

Most successful mobile services normally evolve onto the web or set-top box. Any platform you buy should be scalable so that it can support any future expansion.

✂ What rich functionality is available in the platform?

The more functionality you can provide around search, personalisation and recommendations, the better user take-up will be and the more successful the mobile TV guide will become. Make sure that the search functionality can quickly find the next sports fixtures. And compare recommendations against those from other suppliers in the market.

✂ What personalisation is supported?

The mobile phone is the ultimate personalised device. The CDP should include functionality for remember user preferences including their TV package, favourite channels, shows and topics of interest.

✂ Will the platform increase revenues?

The key to success of most projects is whether they are profitable. Selecting a platform that contains built-in tools for targeting advertising and support for show and channel promotions will ensure that any advertising income is maximised.

✂ What reporting is available?

You should expect, if not real time, then at least daily reporting. This should show the usage of the TV guide, which shows and channels people are selecting most and how this is driving take-up of any premium content.

✂ How much overhead will there be in managing the service from your side?

Do you want a mobile-TV guide engine that requires a team of back-end staff to manage the service as channels change or one that is fully automated? Make sure you are clear on the staffing implications of the product you choose.

The TV Genius advantage

TV Genius is the premier provider of online TV discovery technology. The TV Genius platform is used by millions of people across Europe to plan their TV viewing. Designed from the ground up as a platform to build TV guides, it has unprecedentedly rapid time to market and the flexibility to deploy and modify services as viewing habits change.

In use by premium brands such as ITV, What's On TV, AOL, BSkyB and Freeview, the TV Genius Content Discovery Platform provides a proven basis for a mobile TV Guide with the following unique advantages:

- **Simple implementation** – a full mobile TV guide service can be deployed with very low levels of systems integration, reducing the need for internal resources to support a deployment and reducing time to market.
- **Fully managed service** – there is no overhead in updating the product as TV services evolve and a full 24x7 service-level agreement ensures any problems are resolved in as little as 15 minutes.
- **Extensive client base** – with a proven client base, TV Genius can be trusted to deliver. A sample of clients includes AOL, Arena, Bauer, BSkyB, BZ Berlin, Daily Mail, Freeview, IPC Media and ITV.
- **Low cost of ownership** – with low systems-integration cost and a fully managed service, the cost of deployment is much less than comparable solutions that require extensive customisation and management

To learn more about how you could implement a Mobile TV guide using the TV Genius content-discovery platform, please email sales@tvgenius.net

