SOCIAL NETWORKING APPLICATIONS FOR CABLE

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Abstract

To paraphrase Wikipedia"s definition: A social network is a set of individuals tied together through some form of interdependency. By this loose definition, I submit that the set of all cable TV subscribers does in fact form a social network. The connections between subscribers are implicit, as they simply share a connection to a cable service provider. But their interdependence is real in that the audience as a whole directs what content flourishes and what advertising is presented.

The introduction of programmable receivers, through ETV and tru2way®, the use of consumer-owned devices such as iPads to extend aspects of cable service, and the popularity of social networking applications on the Internet combine to suggest that the time is nigh for cable to consider strategies to create valuable applications based on its own implicit social networks.

Social networking apps on cable could help to extend the cable experience to more touch-points is a person"slife, integrating entertainment into communications for instance. A key effect of such services would be to generate data about user activity, and this data in turn dives ever more innovative and valuable services.

There are two aspects to consider: what is the nature and expression of cable social networks, and how might applications based on these networks be developed?

A natural instinct for each operator may be to develop these services individually, but the well known value of the "network effect" argues that these services should include the entire cable audience. These services are more useful to subscribers as more subscribers join in; i.e. a „Top Ten on Cable"is arguably of more utility to viewers than a top ten on a given cable system.

At CableLabs we always look for ways to streamline the adoption of new technologies in cable through development of interoperable interfaces, content formats, and other technical elements. While one theme of this paper is to suggest areas where common definitions might be valuable, the greater goal is to encourage thinking about new ways to enhance the cable experience with social networking applications.

IT'S ALL ABOUT APPLICATIONS

From a user"s perspective social networking is simply a matter of using an application that includes some kind of social networking feature. I won"t attempt to derive some theoretically precise definition of exactly what attributes a social networking application must or must not have. For our purposes, we might consider social networking applications as those that either support direct communications between users, or that incorporate some aspect of dynamic collective user behavior. This eliminates applications that simply reference static user databases, but otherwise leaves the field pretty open.

Observe that social networking applications do not necessarily rely upon explicit user selection of connections. For instance, while many aspects of Facebook, like viewing a profile and posting to someone‟s Wall requires you to be friends with that someone, other functions, such as friend recommendations, are performed without users actively making connections.

Note also that explicit user registration with the application is not always necessary. For instance, users register with Netflix to get videos, but the Netflix content recommendation engine is a social networking app that leverages the viewing history of the entire set of Netflix subscribers.

This scenario is analogous to how we might view cable social networking. People voluntarily sign up for cable service, and along with that may come a whole host of applications that embody social networking features.

Because some popular Internet social media applications publish open web APIs, integration of cable applications with these services is possible. For instance, a widget on a tru2way® set-top box or a cable iPad app could allow a viewer to send pre-formatted Tweets about what they‟re watching or about what content they like, or post similar messages on Facebook.

However, cable could develop its own applications that serve to draw viewers deeper into the video experience. Facebook on its own can‟t truly integrate with the cable experience by presenting content.

Examples of applications that might flourish on cable include:

- Content sharing – push a button to send a TV show link to someone. They in turn can simply push a button to view the content
- Chat – open a chat window and join in conversation in real-time while watching TV
- Content Ratings – push a button to rate what you‟re watching. The ratings could be used by your cable provider, shared with other cable providers for a nationwide cable ratings service, shared with Rotten Tomatoes, sent to Twitter, and more.
- Content recommendations and personalization – navigation systems can learn from the viewing history, preferences, and ratings of your friends and the network at large to explicitly recommend content or configure the presentation of content

It appears there are two broad categories of social networking functions – those that entail direct one-to-one, one-to-many, and many-to-many communications among members, and those that harness the intelligence of the network to provide value added services to members.

UNLOCKING THE INTELLIGENCE OF THE NETWORK

At its most simple, the set of cable subscribers is defined and instantiated within the billing systems of each operator. However, lots of extenuating data are or could be associated with the basic billing records. No generalized model has been developed to describe such information, nor are interoperable interfaces available to potential application developers. We are not suggesting open interfaces, available to any would-be developer (although over time this might be valuable), but rather interfaces that make internal cable operator application development efficient and that allow applications to be portable across systems, a key cost saver.

One means of capturing the value of billing records and other data sets is to define a generalized data model. A logical data model can provide a so-called abstraction layer separating the specific encodings of data from the logical structure of the data. A data model describes data entities and their relationships, and serves as a description of data independent of its physical representation. This is a critical enabler for applications, as all applications can be written against the data model, while data storage, transfer, and encoding formats can vary or be modified without breaking the apps. This creates a loose binding between apps and data, which is a good strategy in managing complex systems.

A data model might be organized around the concept of a User Profile through which a number of discrete data sets are associated. Differing data sets can be subject to different policies and protections, with differing access controls. For instance, highly sensitive Personally Identifiable Information (PII), such as name, address, phone number, can be isolated into its own data set and wrapped in the strictest security and access control policies. By separating this information from other data, these other data, by themselves, remain anonymized.

Other data sets included in a generalized User Profile might include:

- Viewing history
- Entitlements (services and programming packages)
- Devices (the STBs, PCs, tablets and mobile devices from which someone can access cable services)
- Preferences (opt-ins, parental controls, etc)
- Audience Qualifiers (personalization variables)
- Contact List (for explicit social connections)

The following diagram illustrates the key concepts for a generalized User Profile data model. This is simply a sketch of an idea and does not represent an implementation or specification.

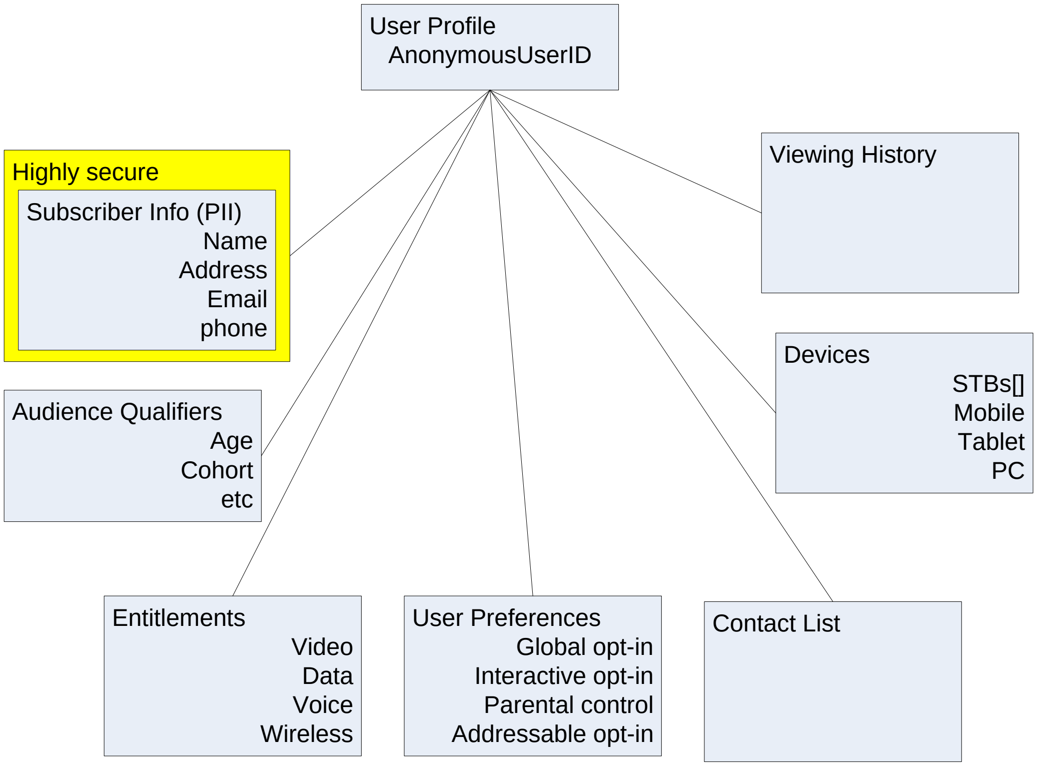

Figure 1: Sketch of User Profile data model

By isolating different types of information into separate buckets, operators can carefully manage access to each data set for every application. This is a good way to ensure privacy while enabling a wide variety of applications to access only the various pieces of information they need. By separating PII from other data sets, those data sets are by nature anonymized.

A User Profile also provides a means to organize and incorporate data sets not maintained by the service provider. Examples might include browsing history and viewing history on non-cable devices, demographic information, so-called affiliate qualifiers, such as status of home and car loan, credit card status, and so on. Also, touch-points with other social networking applications can be established, integrating the cable experience with Facebook, Twitter, and all the rest in a controlled and private way.

We suggest that the industry adopt a single data model for User Profile. This would serve a number of worthwhile goals.

It would provide transparency to regulators, subscribers, and partners. Given the potentially incendiary concerns over privacy, a simple and consistent approach adopted industry-wide might provide the best response.

A single model could also lead to efficiencies and cost savings, as application developers, both internal and external to operators, could work off of a well-known framework.

Finally, interoperability of applications would be possible. Again, this could lead to cost savings, since applications could be reusable on different systems. But more importantly, it could lead to the emergence of a social network comprised of all cable subscribers. The well-documented network effect is thereby amplified, enhancing the value of applications to users and the operators.

A single data model definition does not imply that operators necessarily modify their existing systems. As described above, a logical data model simply provides a description of data entities and their relationships, and does not describe their physical representation. Underlying implementations may vary widely, and many existing systems may already conform to a uniform model, to a greater or lesser degree.

The model is supported where a deterministic mapping between a systems data representation and the model is defined. Also, a given system might not have to support the entire model. A service provider may not collect or maintain certain bits of information defined in the model. This simply means that the system cannot fully support those applications that access that data, but may support a wide variety of other applications..

BUILDING SOCIAL INTELLIGENCE INTO APPLICATIONS

With well-formed data that can be generated by and made available to applications, we may now consider how applications interface with such data.

We might consider two broad categories of apps, those that are solely implemented within the bounds of a particular service provider – either through internal development teams or through partnerships – and those that might be interoperable across providers. While it‟s solely the purview of an individual operator to tackle the first set, the latter set requires coordination among operators.

A useful paradigm might be to consider that User Profiles, and their constituent parts, can be exposed through a set of data services Application Programming Interfaces (APIs). These APIs could be proprietary and made available only to applications that are internal to a service provider. This approach may appear to lead to a faster time to market since internal development teams can simply write directly to whatever access methods might be made available by internal systems. It might also appear that this approach benefits from "security through obfuscation," as external applications can‟t know the access methods to set or get data elements.

Another approach is to develop a set of data service APIs as a companion to the User Profile data model. It must be emphasized from the start that a commonly defined set of APIs does not mean that any and all applications may access them. Just as with any other cloud service or other enterprise-level interface, access is granted only to registered licensees and policy is securely enforced at runtime. The benefits of common APIs are that it collectively saves operators time as one design process leads to the API definition, a single test kit that can be used by everyone, and allows partners to port apps to multiple operators, allowing for the creation of a community that includes all cable subscribers.

Proprietary and standardized implementations of a data services API are not mutually exclusive. Particular operators may choose to implement one or the other, both, or neither.

The exact nature of a common interface is immaterial at this stage. Whether they are RESTful web services or based on some other technology can be determined by a technical committee tasked with their specification. Our concern at the moment is to explore the utility of such an API, whether proprietary or common.

A data services API available to multiple applications provides the means to both grow the User Profile data set and to extend the functionalities of applications.

An example is a content ratings application. Such an application might span multiple operators, therefore requiring and utilizing a common data services API implemented by multiple operators. There also may be one-off ratings apps provided by individual operators.

A ratings application is largely implemented as a network utility, or so-called cloud service, with any number of client instantiations. For example, user facing clients in ETV on legacy receivers, Java on tru2way, JavaScript on IPTV STBs and consumer-owned devices, or native apps on Android or iOS, not to mention web pages on your PC, could all connect to the ratings service. The application supports two primary functions –allowing viewers to rate content, and displaying the average rating of a piece of content.

With our User Profile model, any given user‟s ratings can be associated with that viewer. This enables applications to access an individual‟s ratings to provide recommendations or otherwise personalize their service, but it also allows the ratings service to harvest ratings from any number of users to calculate an average rating.

Once again, I‟ll stress that the data model is designed to protect privacy, and access would be securely regulated on a per application basis.

Examples of client apps that set ratings include a very simple slider bar that pops up on your TV, allowing you to use the right and left buttons on the remote to give the current programming a 1-10 rating, or an iPad app that allows one to set a ratings value for a content selection displayed on a navigation screen.

Any number of apps can then access the ratings database to display ratings for a given piece of content, from within the operators‟ core navigator on TV, from a tablet, web page, etc. Of course, with the proper licensing, an operators‟ app might connect to Rotten Tomatoes or other Internet ratings service and display their ratings. Perhaps the optimal ratings service blends cable generated ratings with other ratings and other metadata services.

If one were to quibble that while a content ratings service utilizes dynamically generated user data, it might not really be a social networking app, then we can extrapolate the basic functions a bit. Imagine now that I want to share my ratings with my cousin in Phoenix, or I wanted to see what my group of friends known as the „TV addicts „ have collectively rated as the best show on tonight"s broadcast line-up.

A network application built in similar fashion as the ratings app could allow viewers to build up contacts and groups lists in a contacts data entity within their User Profile. Again with many clients able to access the service, I might edit my contacts from my PC, tablet, or mobile device, rather then trying to do so with the remote on my TV.

A service provider could extend the access permissions available to the ratings service to allow it to read contact lists, thereby enabling it to incorporate the sharing functions mentioned above.

The following diagram illustrates the key elements of a network application that accesses User Profile data and empowers a multitude of client applications.

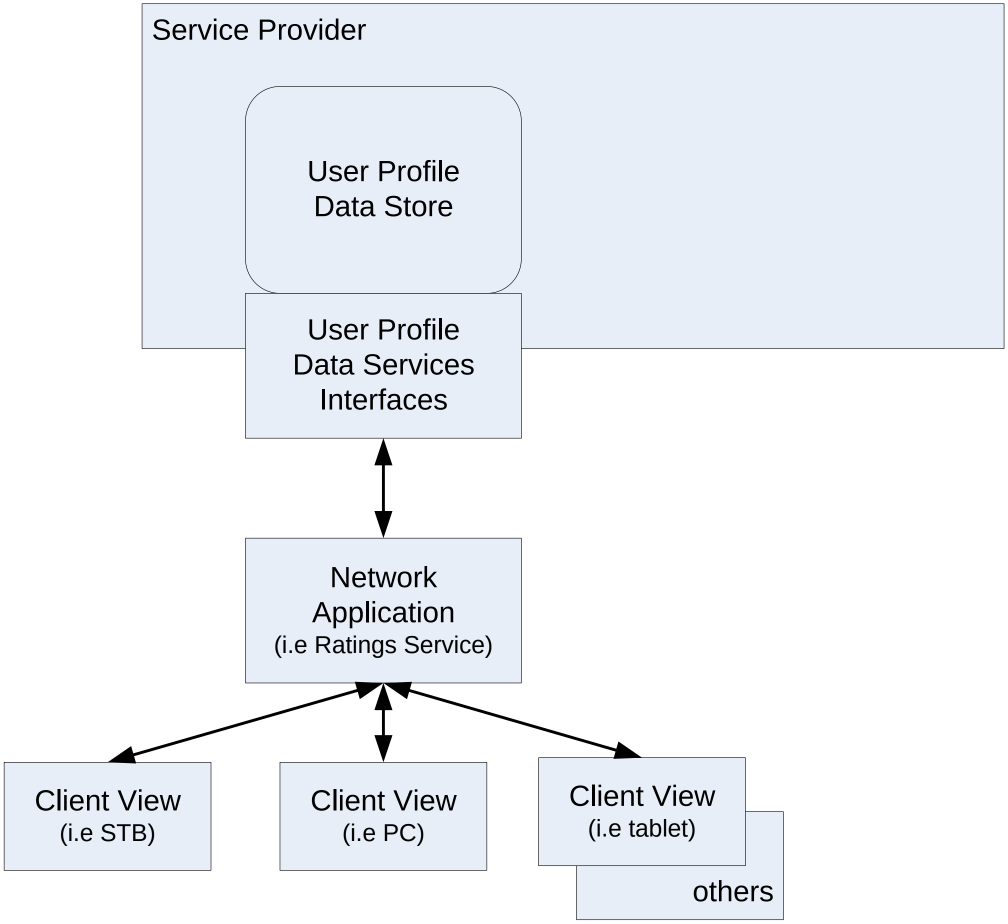

Figure 2: Application model for cable Social Networking applications

BUSINESS CONTEXT

There are many potential benefits to cable for pursuing social networking applications either on their own or in a federated manner. Not only would cable viewers get many of the same features available from Internet social networking apps, but these features also can incorporate cable capabilities, such as integration of video.

Perhaps an alternative approach would be to develop technologies to empower independent Internet applications to leverage cable assets. While this would certainly be good for the Internet app providers, and could improve the user experience for those apps, it‟s not clear where the value is for cable. It‟s conceivable that such a model might work to cable‟s benefit, perhaps by leveraging these services to support consumption of cable services.

But perhaps the greatest value to cable in pursuing a social networking strategy is to support a robust set of data services. Just as Google, Amazon, and Facebook view the data they collect about their users as key strategic assets, cable can also position itself to use social networking apps to extend and to utilize subscriber generated data. Ultimately, this can lead to cable playing a more intimate role in peoples‟ lives.

As new social networking applications become available through a cable provider, on the TV, the web, tablets, and Smartphones, the cable provider can play a more central role as not only a go-to entertainment source, but as a provider of all sorts of communications and utility applications.

With social networking apps, cable could provide compelling user experiences that enrich its value proposition, and increase subscribers contact. Ultimately, keeping customers focused on cable services, rather than sharing them with other service providers, is of tremendous benefit. Rather than ceding ground to Internet social networking sites, cable can retain mindshare and consumer data by providing social network functions directly.