With the Right Support, MVNOs Can Enrich Network Operators with Innovation, Differentiation, and Market Share

Abstract

This white paper looks at what it takes for network operators to successfully partner with Mobile Virtual Network Operators (MVNOs) to enhance market share, revenue, and profitability. Drawing in part on our experience as a leading MVNO enabler, it examines how MVNOs have evolved differently around the world, and draws some conclusions as to what kinds of MVNOs and business plans are most synergistic with and beneficial to the financial success of their underlying network partner.

Our conclusion is that when their products (services) are largely undifferentiated, MVNOs compete with their hosts, leading to potential market share gains, but margin erosion. However, when significant differentiation exists, and well-defined and underserved markets are identified, MVNOs can help host networks grow share, reduce churn, and maintain or enhance margins. In effect, they become specialty brands and marketing organizations with expertise and focus that the network operator cannot apply to each and every niche opportunity.

This paper finishes with an overview of the business relationship, service differentiation and charging tools, and other capabilities that network operators need in order to cultivate long-term, cooperative, profitable partnerships with MVNOs.
The MVNO controversy: First the bad news … Then the good

Despite a small number of high profile failures, MVNOs have become a significant and rapidly growing part of the global mobile industry. Juniper Research estimates there were 18 million North American and over 60 million European MVNO subscribers in 2006. MVNOs have expanded the market through more aggressive discounting, better distribution, and innovative marketing. Yet there is significant controversy — or at least different perspectives — on whether MVNOs have been of net benefit financially to the host mobile network operators on whose networks they operate. Many network operators believe — possibly rightly — that MVNOs simply take market share from them, selling at a discount and lowering overall margins.

Consequently, MVNOs are not always courted by network operators, and, in many instances, they have only prospered due to regulatory frameworks that in some countries mandate access to incumbent mobile networks.

Figure 1 – Mobile Voice Market in Europe: Revenues, Traffic & Average Revenues Per Minute

Before we get to the good news, let’s start with the bad news. Some MVNOs have provided discounted service with little other differentiation. This kind of “me too, only cheaper” approach appears to offer some consumer benefits, but it has two negative impacts on the network operator who, after all, spent billions of euros (dollars, etc.) on a combination of license, network build-out, and supporting infrastructure. First, an undifferentiated service simply transfers customers from the network operator (who charges at retail) to the MVNO who pays the network operator at wholesale, reducing margins. Second, and more subtly, it creates price pressure in the market, lowering the retail price that a network operator can charge to recoup its huge investments and ultimately generate a return to its shareholders. This is likely exactly what regulators had in mind. Yet very little consumer-benefiting innovation results from this model.

Consumers want innovation and are willing to pay for it. Mobile communications, after all, was a major innovation that consumers have shown great interest in and willingness to pay for. If all that consumers wanted were lower costs, they could simply cancel service and their costs would go to zero. But they don’t. This suggests that a better model exists — one in which the MVNO, the
network operator, and the consumer all benefit. That’s a much more interesting proposition. That “win-win” proposition is the subject of this paper.

Benchmarking other industries: The race to variety

For a moment, let’s look at developments in other industries as a guide. In most manufacturing and service industries, the world has moved away from “mass production,” in which a single compromise product was manufactured cost effectively and sold to the entire “mass market.” More flexible design and manufacturing have made a new production paradigm economically feasible — and vastly more attractive for consumers and manufacturers alike: “mass customization.” Under mass customization, specialized products are built, often using common manufacturing facilities and major components. This enables a range of products — each of which has real appeal to a niche segment. Compromise products — “one size fits all” — don’t stand a chance.

From heavy manufacturing, examples abound. Auto companies have reduced typical, economic production runs from hundreds of thousands of units to the range of 5,000-20,000. Consequently, a consumer can have a sedan, sport coupe, convertible, or ruggedized “off road” version of what is basically the same platform, built in the same factory, sharing many components. For example, the Audi A3, VW Cabriolet, VW GTI, VW R32, and Audi TT (until recently) shared the VW Group’s A series chassis and tooling. Yet each of these cars holds strong appeal to a niche segment and often sells at a significant premium. It appears that network operators with unique services and channels to market can also charge premium prices (margins).

Online services have used the same trick. MyYahoo!, MySpace.com, YouTube, and myriad others have taken basic Web capabilities and allowed them to be customized, mostly with content, preferences, and links. Once hooked, consumers won’t return to the default Web page or to broadcast TV.

Mass customization for mobile telecoms

Recent events in the North American market seem to validate this global trend toward more variety, and demonstrate that it can grow share, margins, and customer satisfaction in our own industry.

It turns out that mobile consumers like choice, too. It is certainly no surprise that they have different needs, different content likes and dislikes, different budgets, different affinities for new services, different native languages, and different calling patterns. Unlike the development of MVNOs elsewhere (admittedly, this is a generalization, but still largely true), North American MVNOs are developing as entrepreneurs (like Movida and kajeet), and consumer market-focused companies (like Virgin Mobile USA, Flying J, and Tandy) identify and fulfill unmet consumer desires. These entrepreneurs are not simply discounting plain mobile service. They are finding new niche markets and delivering customized services to capture those markets.

Virgin Mobile USA saw underserved youth and weak prepaid plans. kajeet saw a need for a service that was family friendly and “tween cool” as seen from the perspective of “tweens” balanced by the concerns of their parents. Movida saw a Hispanic market in the U.S. with a wide range of unmet needs, from attractive international calling to native language support and convenient distribution channels. Flying J may be the most innovative — or perhaps unusual. As the largest North American truck stop operator, it recognized the unique needs of over-the-road truckers for communication, news, and alerting services that it is uniquely positioned to meet. Trade in your CB radio for a mobile? These are markets that most large network operators simply don’t have the familiarity with, or the time, resources, and creativity to address.
What is unique about each of these MVNOs and many others like them is that they created unique new services and packages, and targeted unserved or underserved market niches. None had a business plan to sell “the same thing, in a different box, cheaper.” Rather than dividing the existing market into smaller segments at lower price points, they grew the market, increased content, and arguably raised price-points by delivering services that customers wanted to buy — or buy more of. That’s powerful. When this model succeeds, the MVNO builds a niche telecom business, the network operator gains business it would otherwise have forgone, new services gain traction, and the customer gets services previously unavailable. Everyone wins.

Figure 2 – Business Models & Infrastructure Requirements

It’s also worth noting that each of these operators employs personalized, interactive services. These services operate differently, in real time, based on who is using the service, when they are using the service, and what they are trying to do. Timely promotions might be offered. A discount might be applied. Adult content might be blocked. All of these raise value because they target the needs of individuals or small groups. This is the key distinguishing characteristic of many successful services — such as MyYahoo!, Movida, and kajeet. We expect it could also become a winning characteristic of MVNOs that provide similar controls and authorizations for enterprises: controlling expenses and helping to ensure compliance with proper business use. More on this later.

Hello, car? Hello, machine tool?

A great deal of growth is forecast for these combined segments served by North American MVNOs. Many analysts project that the market will grow to about 12% of the overall market, or roughly $14 billion (U.S.) by 2012. MVNOs are already fueling rapid, belated growth in the North American prepaid market. Yet there are quite a few, potentially larger, untapped markets that will almost certainly require a market- and opportunity-focused company (i.e. MVNO).

Beyond kids, beyond families, beyond prepaid, beyond truckers (although trucking comes close) lie untapped opportunities for services that will look little like traditional cell phone service, but may be equally lucrative.

In the beginning, people talked to people. More and more, people communicate with machines or machines communicate with machines. One example is telematics. One of the largest users of
cellular service in North America is OnStar, General Motors’ in-car emergency communications service. Most of OnStar’s usage today is initiated by the driver or passenger, but extensive work is going on to enable real automotive telematics. The EU, for example, has a funded program to better define telematics services, architectures, and feasibility.

Telematics offers great promise in automotive applications and also in a more generalized sense. Cars can report component and systems irregularities, get software “patches,” and communicate directly with diagnostic equipment — all leading, it is hoped, to fewer outright failures and lower maintenance costs. Similarly, telematics can facilitate fleet tracking, inventory movement, military coordination, and a limitless set of applications that large network operators may not be able to predict — but niche entrepreneurs and industries will.

These telematics opportunities don’t really fit well with a typical network operator’s infrastructure and business processes. Cars, for example, are unlikely to walk into the local phone store and sign up for a cellular plan. Machine to machine plans, similarly, are unlikely to be based on “minutes of use.” These are valuable applications that break almost every distribution, measurement, billing, and servicing rule. They are ideal, in other words, for a focused MVNO, whether formed by entrepreneurs or, possibly, by organizations within the automotive industry. Other industries almost certainly have similar needs.

A prescription for success: Capabilities and tools

Boiling all this down to a simple conclusion, we can say: “MVNOs can grow the overall market and be a core asset to a network operator’s business, so long as these MVNOs target new opportunities and their services, pricing, and market targets are significantly differentiated.”

The concept of differentiation is simple, but implementation is significantly more complex. Real differentiation means that each MVNO requires the ability to develop unique services, offer unique charging plans (which may not even be based on familiar units like minutes), interact differently with customers, and support very different channels to market. In short, existing plans, services, and channels cannot always be repurposed for MVNOs.

Success in this situation means giving MVNOs the flexibility, technical interfaces, and tools they need to develop distinct market focus, products, and brands. They must have the ability to:

- Develop personalized and interactive services that customize the network’s actions in real time — for example, redirecting content or filtering out adult material
- Manage customer subscriptions and activations through unfamiliar channels
- Create new services and integrate with partners, such as enterprises
- Define new plans, charging methods, and even usage data requirements
- Collect usage data — their way
- Control access, authorization to the network, and services
- Provide user control for plans, policies, subscriptions, and all other forms of personalization and customization
- Authorize users’ privileges, and even those of machines
- Process and rate a variety of value-added digital content, including: messages (SMS, MMS, possibly IM), streaming media (video, clips, music, audio), downloads (ringtones, wallpaper, music files, video files, games), and myriad future formats
• Create VPNs, dialing plans, and other network session-handling intelligence
• Define, measure, and report on customer-specific and service-specific SLAs.

This means that an underlying network host’s existing Call Detail Record (CDR) generation, call control, data session control, billing plans and systems, authorization routines, and activation/provisioning processes are probably inappropriate — because they are designed and optimized for a different market and a different set of services. And certainly they are not intended to allow dozens of distinct brands to operate simultaneously. This is a key issue, since every operator will encounter a strong bias to reuse what exists today — it is fast, has less impact on the network and on business processes, and is proven to work. The irony is that in repurposing those systems and processes — based on preconceived or traditional notions of what constitutes a customer, service, plan, and charging unit — the very differentiation that will grow the market pie for both parties is compromised. This approach may work, but will leave price as the major differentiator open to the MVNO. That’s not a win-win situation. In fact, maybe nobody wins.

Today’s open network architectures, from the almost ubiquitous IN variants (including GSM/MAP/CAMEL, CDMA/IS41/IS771, and 826 protocols), to, especially, the emerging IMS and Web 2.0 architectures, actually make it practical to separate much of the service delivery framework (e.g.: online charging, content delivery, applications, etc.) from the underlying network. This means that it is technically and economically feasible (and, as we shall show, low risk) for MVNOs to create their own service environments, deliver customized services, control access, measure usage, define charging plans, and manage customer (but not network) operations.

![Figure 3 – Evolution of the European MVNO Landscape](image)

Telcordia has recognized the need that MVNOs have for their own sophisticated, control capabilities. Our work in this area has led us to develop a fully hosted Mobile Virtual Network Enabler (MVNE) environment that we manage out of our own data centers and that has been extremely successful with innovative North American MVNOs. This experience has given us unique insight into the types of features and functionality that MVNOs need to support their special constituencies and to engage in win-win relationships with network operators. A comprehensive design analysis is beyond the scope of this white paper; however we would like to note four attributes that we believe are essential to this type of MVNO solution.
Hosting

Given that MVNOs tend to be small operations and/or new to telecom, the Software as a Service (SaaS) model lowers the initial cost of launch and shortens the time-to-market for new operators, plans, or services. It also allows non-telecom firms to focus on the managerial and marketing tasks that make them so unique, while leaving the technical details to their host network or MVNE.

We believe that a key capability of a hosted MVNE must be real-time, secure integration with the underlying network partners’ infrastructures and OSSs/BSSs. Such a capability allows MVNOs to implement truly unique services, pricing plans, call control, session authorization, and other policy and customer self-service decisions without relying on the underlying networks’ intelligence or surrounding infrastructures.

In addition, by performing integration once between the network and call/session control, on behalf of many MVNOs, the host removes a major source of delay, risk, and cost for both the MVNO and the underlying network operator. An experienced host can also perform the integration without compromising the security and reliability of the underlying networks.

Flexible Charging and Policy Engine

One of the most powerful sources of innovation is also one of the oldest: the ability to innovate in pricing plans and promotions. Major successes in the telecom industry have frequently been related to pricing/charging: MCI’s “Friends and Family,” AT&T Wireless’ “Digital One Rate,” Virgin Mobile’s “Simple and Honest” prepaid plans in both the U.S. and the UK, and myriad others.

Recently, pricing and charging have been changing dramatically on two fronts. On one front, operators must expand their revenue base into digital content, messaging, and eventually micro-payments for non-telecom (but potentially related) goods and services. On another front, they must embrace the move away from access charges and fees, toward more complex models that may include advertising-driven and sponsored usage. For example, the essence of “free VoIP” is that it is often not really free, it’s just sponsored by another entity (like an advertiser). This is certainly the model for SKYPE, GoogleTalk, and Yahoo Communicator.

When a solution platform includes a flexible charging and policy engine, MVNOs can create truly unique offers that target underserved niches and complement network operators’ mainstream offers. It is also important to make clear that not all “real-time charging and policy environments” are created equal. To truly empower MVNOs, an “environment” or “platform” should have capabilities that are significantly different from those found in any postpaid billing or prepaid system.

To understand those differences, let’s take that phase apart piece by piece:

- **“Real-time”** – The hosted environment must be able to exert control over every call or data session while it is being set up and throughout its duration, authorizing users and performing rating and charging calculations based on MVNO rules.

- **“Charging”** – MVNOs should have the ability to write custom rules that dictate how and when rating takes place, and what happens based on various outcomes. For example, pricing might change after 500 minutes have been used in a month; it might involve discounts, promotions, and third-party settlements; and it might be based on prepaid, postpaid, converged, and “hybrid” models.

- **“Policy”** – The hosted environment should support a wide range of usage limits, controls, whitelists, blacklists, content delivery rules, and other personal policy capabilities to let MVNOs or network operators implement new service concepts with as few limitations as possible.
• “Environment” – This term should not refer to a product with hard-coded or narrowly-defined feature sets (even if the set of features is rich), as is typical of prepaid and postpaid systems. Rather, an effective hosted environment can and should feature workflow and rules definition tools that provide the flexibility to innovate and respond to future market conditions and opportunities — opportunities that, by definition, we cannot always anticipate!

**Integrated, modular architecture**

In many networks, services are implemented as “silos.” Silos have been built for voice, messaging, content download, etc., with each silo containing user preference, service pricing/rating, and other configuration data. The problem with silos is that they manage each service as if it were independent of others.

By contrast, a modular framework mirrors the design intent of the TM Forum, OMA, and 3GPP’s IMS. It allows an MVNO to share user preferences across voice, VoIP, SMS, MMS, content download, browsing, and video — to name just the most common services. For example, if a user subscribes to filtering (blocking) of adult materials, ALL adult materials can be filtered – from premium rate chat lines to “blue” SMSs and inappropriate pictures and video clips.

This integration results in a far better user experience and in faster, cheaper time-to-market for new service offerings. Moreover, as a service capability is enhanced, or as subscribers update their preferences, those changes are applied to ALL services seamlessly, reducing customer care costs and improving satisfaction. This is but one example of how a modular, standards-based charging and policy environment becomes even more valuable to service innovation as media-types proliferate.

**User provisioning**

One more critical asset for MVNOs that intend to create differentiated services is complex user provisioning. The very nature of a differentiated MVNO means that its service mix and service options must differ from those offered by the underlying network operator. Similarly, this need for differentiation implies that a host operator’s existing provisioning infrastructure may not be well suited to an MVNO’s unique service mix and customer base, and is unlikely to be an ideal system for use by the MVNO’s crucial retailers and other independent channels to market.

Typically, an MVNO will have at least two market/channel entities and three network/service environments to manage for provisioning and customer configuration changes: the retail channel, user (self-service) portal, network operator (e.g.; HLR, HSS, SGSN, PDSN), and generally at least one third-party content or clearinghouse provider. One of the most essential functions that the hosted platform can provide its MVNO customers is a channel-friendly provisioning workflow that can provide a simple interface to portals and point-of-sale/inventory systems, while managing the complex interdependencies for provisioning and activation of new customers. In many cases the unique offerings of MVNOs will have more third-party demands and more need for complex workflow management — tasks that network operators’ provisioning systems were never intended to handle.

**Summary**

The telecom market is evolving along the lines of almost all other markets, and will inevitably reward those who offer unique, attractive services and plans that fit every business need and lifestyle. MVNOs are an ideal vehicle to unite the visionary business and market plans of entrepreneurs or market-facing companies with the vast technological investments made by network operators in mobile and broadband networks.
Telcordia has demonstrated, through our work with over a dozen innovative MVNOs in North America, that a flexible Mobile Virtual Network Environment (MVNE) capability can nurture win-win relationships by offering important business advantages to both MVNOs and network operators.

By arming MVNOs with flexible service creation, charging, and policy infrastructures, the hosted environment allows MVNOs to unleash their creativity — offering truly unique services, pricing plans, call control, session authorization, policy decisions, and customer self-service — without relying on the underlying network’s intelligence or on its surrounding infrastructure. What’s more, MVNOs can accomplish all this with lower up-front technology investments, faster time-to-market, and the opportunity to collaborate with technology experts.

Similarly, the MVNE approach benefits network operators who want to target niche markets via MVNOs, but are not organized to do so, by providing: shared investment risk with the MVNE, reduced technical risk (particularly when it comes to sensitive IN, INAP, and IMS integrations), and access to a highly focused service delivery environment and experienced technical partners.

In other words, managed correctly, MVNOs need not compete with network operators’ mainstream offerings. Rather, they can help network operators gain share and capture premium-priced services that would otherwise be difficult, if not impossible, for the network operators to manage.