The Strategic Guide to IVR Investments in Carrier Environments

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INTRODUCTION

Carriers must differentiate on service and application delivery as competition increases in a rapidly changing global communications market. Increasingly, the dividing lines between telecom and wireless carriers, cable operators and internet companies are disappearing as convergence and multimedia gain traction. For over twenty years phone-based automation, routing and service enablement thrived among carriers as they relied on these interactive voice response (IVR) applications to service their growing subscriber base. These were mainly powered by proprietary (traditional) IVR systems. But in recent years, business needs have outgrown the constraints of traditional IVR and rigid TDM-based telephony architecture, where traditional IVR has been the native platform. Carriers want to expand beyond voice portals and provide an infrastructure for all forms of video and interactive experiences including multimedia, visual advertising, video messaging and video call completion. As a result, traditional IVR is quickly becoming an antiquated technology as carriers move to more flexible web services deployment models and IP architectures that favor a web-based open standard like Voice Extensible Markup Language (VoiceXML).

Once closely associated with speech recognition, VoiceXML is now hailed as the industry open standard for IVR. It is identified as the next generation IVR platform standard, providing for greater levels of interoperability and flexibility, enhanced application development capabilities for DTMF and speech applications, investment protection and lower total cost of ownership (TCO). Carriers are therefore replacing their aging traditional IVR platforms with newer VoiceXML platforms that align better with changing organizational needs, an IP infrastructure and stringent service provider performance requirements.

This whitepaper analyzes the costs and benefits that open standards-based IVR platforms provide to carriers and enables readers to:

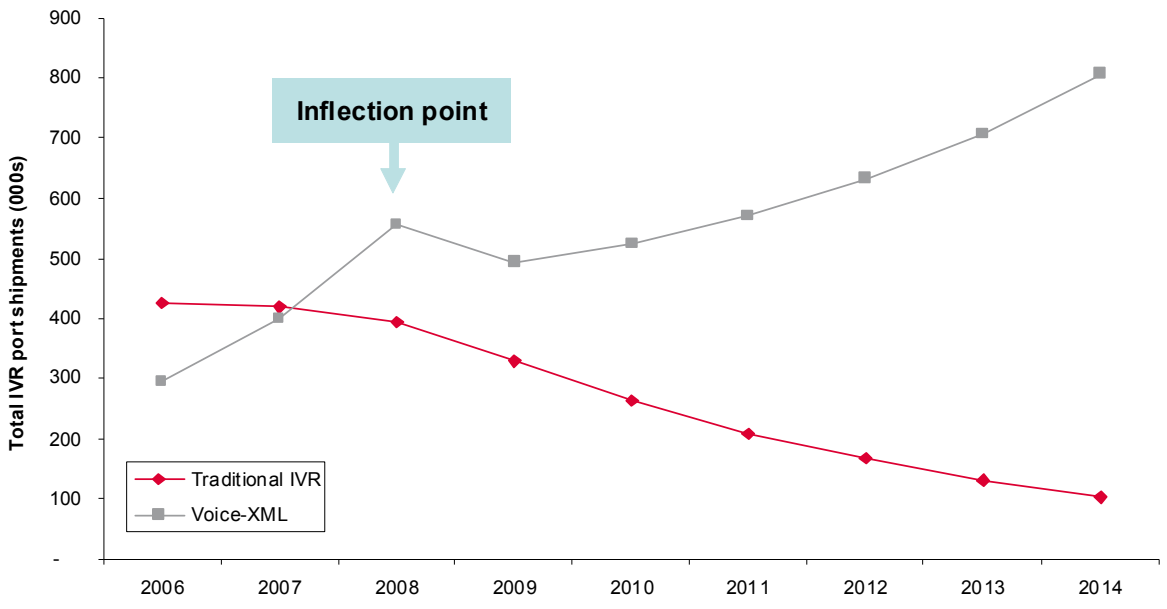
- Understand the market landscape and dynamics of open standards-based IVR platforms;
- Grasp the real cost advantages of VoiceXML platforms;
- Hear about one carrier's experience using strategic IVR investments to raise ARPU;
- Gain insight into HP's strategy to help service providers as they consolidate assets while delivering new services.

BUILDING A BUSINESS CASE FOR OPEN STANDARDS-BASED IVR

The IVR landscape has undergone a seismic shift

Organizations have now fully endorsed VoiceXML as the standard of choice when it comes to IVR technology. In fact, the inflection point in the market is now an afterthought as increased adoption of VoicexML sets the stage for current and future investments in IVR. Traditional IVR platform license shipments will shrink from 420,000 in 2007 to 102,000 by 2014. In contrast, VoiceXML license shipments will more double from 401,000 to 806,000 over the same timeframe, as shown in the following figure.

Figure 1: Global IVR port shipments, 2006-2014



Source: Ovum

What is driving growth in next generation VoiceXML platforms?

Although it was initially created for speech recognition solutions, platforms based on the VoiceXML open standard have been widely deployed by carriers for purely DTMF applications as well. The open standard marks the next evolutionary step in IVR technology and will open up new application areas such as speech, multimodal and video, outside the traditional scope of phone applications. There have been several drivers to the uptake of VoiceXML since its commercial release in 2000, as highlighted on the following page:

- The slow death of traditional IVR – Traditional IVR investments from the late 1990s to the early-to-mid 2000s are reaching end of life and VoiceXML have begun accounting for the majority of licenses since 2008. Carriers find themselves having to come to the decision on when to migrate to VoiceXML. It's no longer a question of *if* an investment in VoiceXML will be made but *when*.

- IVR consolidation and optimization – Many large carriers own multiple IVR platforms from different vendors. Some inherited these through acquisitions and mergers; others have allowed internal business units to invest in separate IVR platforms over the years. Management and maintenance of these disparate systems can prove difficult, and is not cost effective for many organizations, particularly in the long term. Standardizing and consolidating on a single VoiceXML platform has provided numerous cost, management and performance advantages for carriers. IVR consolidation and optimization are one of the major draws for investment in VoiceXML.

- Leveraging interoperability and mitigating risks – The availability of open standards-based platforms minimizes the risk for application upgrades, expansions and consolidations. Organizations could swap out a VoiceXML platform for another without any heavy integration efforts. This protects investments and prevents vendor lock-in. What is unique about VoiceXML is that while some IVR vendors may go out of business or get acquired by another IVR vendor, the open standard will remain over the long-term. In other words, organizations can replace their platform with a platform from another vendor without the need for extensive application rewrites or forklift upgrades.

- Taking advantage of economies of scale to become more agile – With VoiceXML, organizations have more resources available to create, tune or modify their IVR applications. Proprietary development environment skill sets are no longer needed as carriers are able to standardize on a VoiceXML platform and service creation environment. These resources could include their web development teams as VoiceXML is based on standard web languages, like XML. The result is an infrastructure that allows the company to be more agile and adapt their IVR solutions to short-term opportunities at an affordable cost.

- Alignment of IT and business processes around an IP infrastructure – A growing number of service providers are aligning their IT strategies with business processes to consolidate and centralize their existing IT investments around an IP infrastructure. 'Doing more with less' is the mantra as organizations look to IP to stitch together siloed environments while marrying business applications with business processes. Therefore, more organizations are looking to reduce capital expenditure by leveraging discounting across multiple product lines from a single vendor.

The drawbacks to VoiceXML

While VoiceXML has been commercially deployed in the market for several years, there is still apprehension among some carriers; the 'should I adopt, should I not adopt' debate centers around three main arguments:

1. **Sunken investment in traditional IVR systems** – Carriers are reluctant to undergo a forklift upgrade of their existing traditional IVR platforms, particularly after investing significantly in these platforms. Outside of capital expenditure (CAPEX), these investments require training staff to maintain and continually improve the platform as required, and the cost of re-training staff on a VoiceXML platform may not be an exercise many companies wish to undertake. However, with numerous disparate IVR platforms, the economies of scale realized from standardizing on a VoiceXML platform is enormous.

2. **Relative immaturity of VoiceXML** – Although only really available for commercial access since 2000, VoiceXML is sometimes viewed as an adolescent in the slow moving telephony market. It currently runs at version 2.1. However,

version 3.0 is expected to have more features. This prolongs the uptake of VoiceXML as some companies take a 'wait and see' approach to determine how this platform can further enhance their processes.

3. **Building traditional IVR systems in-house** – A handful of carriers have built or are building their own traditional IVR systems in-house. Most of these companies are based in APAC where labor costs do not make these large scale in-house projects prohibitive. However, one of the major disadvantages with going down this route is performance. Many carriers will not have the in-house technology expertise to build robust, high performance, mission critical IVR platforms that work effectively in a service provider environment. Moreover, creating a proprietary IVR systems limits innovation and development capabilities.

WEIGHING THE COST ADVANTAGES OF VOICEXML

Itemizing CAPEX and OPEX

The key cost advantage that VoiceXML offers over traditional IVR systems is realized in the total cost of ownership (TCO) of the solution. In order to conduct a thorough cost comparison between traditional IVR and VoiceXML, one must identify and evaluate CAPEX and operational expenditure (OPEX). CAPEX is primarily concerned with the cost of acquiring an asset and additional costs of adding value to the existing asset. Table 1 itemizes CAPEX for both traditional IVR and VoiceXML systems.

Table 1: Itemizing CAPEX for IVR systems

Costs	Description
DTMF and speech-enabled IVR port licenses	Licensing for IVR systems typically adheres to per port pricing. A port is a standard measure for IVR systems and determines the number of processes a system can handle at once. Industry averages show that per port pricing among traditional IVR and VoiceXML platforms vary, where VoiceXML ports are typically more affordable and can be more than 10% less in price. In addition, port utilization for VoiceXML systems tends to increase as carriers centralize and optimize IVR utilization once they make new investments in VoiceXML and deactivate traditional IVR ports.
Hardware	Hardware costs are in addition to licenses costs. VoiceXML enables carriers to utilize off-the-shelf servers for IVR, while traditional IVR systems utilize proprietary hardware.
Application development	Carriers must engage in professional services through a 3rd party vendor or conduct application development in-house to create and deploy DTMF and speech applications that work with the IVR platform. Costs will vary depending on application feature and function and whether it is DTMF or speech.
Installation and systems integration	Professional services needed to install and integrate the application and IVR platform to back-end systems are crucial to the success of the IVR solution. As a web-based open standard with common APIs, VoiceXML platforms can typically be installed and integrated quicker than that of traditional IVR.

Source: Ovum Costs do not reflect speech engine licenses

The subsequent costs of maintaining an IVR platform is observed through OPEX costs which are itemized in Table 2 for traditional IVR and VoiceXML solutions.

Table 2: Itemizing OPEX for IVR systems

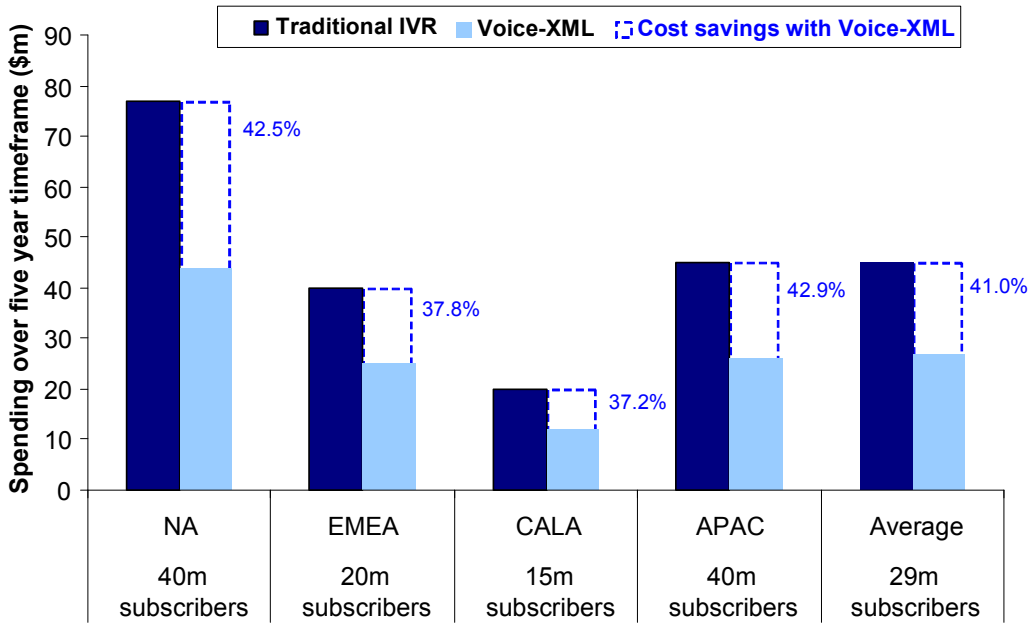
Costs	Description
Maintenance and support	Maintenance costs tend to be a 15% - 22% of the total cost of the IVR system and are paid on an annual basis. Average pricing shows that VoiceXML systems tend to have lower annual maintenance costs than that of traditional IVR systems.
Support staff	Tier 1, 2 and 3 support staffs are needed to manage and maintain an IVR solution (which includes platform and applications). These costs not only include salaries, which are notably higher in North America and EMEA than in CALA and APAC, but also include training and development costs. Carriers can leverage economies of scale by standardizing on a single VoiceXML platform. Management and maintenance of these multiple, different traditional IVR systems can prove difficult, and is not cost effective for many organizations, particularly in the long term.
Application modifications	To meet customer demands and satisfaction levels carriers need to continuously update and modify their IVR applications. Once again, by standardizing on a single VoiceXML platform and development environment, carriers are able to reduce headcount, time-to-market and development costs and thereby leverage economies of scale.

Source: Ovum

Analyzing five-year TCO of traditional IVR and VoiceXML systems across global regions

Analysis of the cost elements that account for CAPEX and OPEX for traditional IVR and VoiceXML systems shows that VoiceXML offers a significantly stronger value proposition over traditional IVR platforms over a five-year timeframe.

Figure 2: Five-year TCO analysis of traditional IVR and VoiceXML platforms



Source: Ovum

As illustrated in Figure 2, a VoiceXML system will save a North American-based carrier, with 40 million subscribers, roughly 42.5% in TCO over a five-year time span compared to the TCO of traditional IVR systems. Similarly, an APAC-based carrier, with 40 million subscribers, will save an estimated 42.9% over the same time-frame. EMEA-based carriers, with 20 million subscribers in Western European markets, will save an estimated 37.8%, while CALA-based carriers, with 15 million subscribers will save roughly 37.2% over five years when compared to the TCO of traditional IVR systems. The five-year TCO analysis of traditional IVR and VoiceXML systems is further detailed in Table 3 below.

Table 3: Five-year TCO analysis of traditional IVR and VoiceXML systems

Scenario	Region	5 year TCO for Traditional IVR systems	5 year TCO for VoiceXML system	Cost savings with VoiceXML	% savings with VoiceXML
NA	40m subscribers	$77m	$44m	$33m	42.5%
EMEA	20m subscribers	$40m	$25m	$15m	37.8%
CALA	15m subscribers	$20m	$12m	$7m	37.2%
APAC	40m subscribers	$45m	$26m	$20m	42.9%
Average	**29m subscribers**	**$45m**	**$27m**	**$19m**	**41.0%**

Source: Ovum

Across regions, carriers on average can expect to save over 40% in costs with a VoiceXML system as opposed to traditional IVR systems, providing for a very compelling story. VoiceXML requires less CAPEX but more importantly enables organizations to improve efficiencies by pooling together application and management resources which significantly reduces costs by more than 40% as shown in the five-year TCO analysis.

CASE STUDY: LEVERAGING IVR STRATEGICALLY TO INCREASE ARPU

One of the largest telecom service provider in Asia with over 100 million customers launched a voice portal service powered by the HP Network IVR (a VoiceXML-based IVR product) to provide value add multimedia services to its subscribers.

The challenges

Due to the rapid growth in its subscriber base, the service provider found it challenging to rollout new value-add services at a rate quick enough to satisfy a growing subscriber base. While in the past this would be written off as typical growing pains of a carrier it is no longer the case today as competition has intensified in emerging countries. The longer lead times in launching new services can result in lost revenue opportunities and customer churn.

When the service provider rolled out new value-add services it deployed on multiple IVR platforms from different vendors which immediately presented several challenges for the carrier:

- Higher costs – Heavy investment was required in E1 trunking for each new service which increased the TCO of their voice services operations.
- Greater complexities – The carrier had to cope with the security and complexity of network integration with many small 3rd parties. In addition, because they had different reporting tools and different key performance indicators (KPIs) from multiple vendors the manageability and traceability of the voice services operations became very complex.
- Resource allocation difficulties – The service provider had to implement multiple security controls across the different platforms and also faced logistical issues moving new platforms across regions.
- Performance constraints – With disparate platforms from multiple vendors, the carrier had sub optimal utilization of E1s and signaling capacities.

The solution and results

The need to streamline and optimize multimedia resources on a single scalable architecture led the service provider to choose HP. The carrier consolidated its IVR infrastructure and deployed all of its multimedia services on HP Network IVR. They implemented a scalable network that targets one billion minutes each quarter and also integrated the HP OpenCall Media Platform with the core network at bearer and signaling levels across almost two dozen telecom regions. This enabled the carrier to significantly reduce overhead costs, streamline management and optimize resources. Ovum estimates the carrier would potentially save 30% over a five-year time frame with the HP Network IVR when compared to the five-year TCO of disparate traditional IVR systems across the numerous telecom circles.

From an application standpoint, the service provider created a single user experience by introducing a one access number for subscribers to interact with a speech-enabled voice portal (that supports nine regional languages) to provide for easier navigation when browsing through different multimedia content and services such as voice SMS, call management services (reach-me service / missed call advisor) caller ring back tone and voice portal. They were also able to publish high value content faster with better reliability.

From an operational standpoint, the carrier was able to simplify customer care, management and bundling of services with HP Network IVR at the service layer itself – resulting in improved efficiency and lower integration costs. Application development capabilities were also augmented with HP as VoiceXML applications (created through 3rd parties) are able to run on the HP OpenCall Platform thereby opening up the pool of developers and talent for new innovative applications. Finally the IVR consolidation concept allows a user centric view of business and operational reporting.

Looking forward

IVR applications in regional languages have been successfully used on some television programs and for audience interaction. This is expected to grow as carriers are increasingly looking to increase average revenue per user (ARPU) through value added services, which is a worthwhile strategy considering that the market for value added services is estimated to have more than 150 million paying customers in the region. Mobile operators have already begun offering the next wave of services such as mobile TV, mobile internet and M-commerce. Furthermore, the demand for more localized,

regional content is also increasing, and regional movie content download is already big in nearly all major cities in the region.

CONCLUSION

Differentiation is increasingly shifting to service and application delivery among carriers as competition increases in a rapidly changing global communications market. Carriers must therefore become strategic and invest in an architecture that exploits the benefits of open standards in a way to deliver multimedia services in a cost effective manner. From a cost perspective, VoiceXML has a clear advantage over traditional IVR helping carriers achieve over 40% in cost savings over a five-year span. Outside the realm of cost, VoiceXML platforms provide several key technology and business benefits over traditional IVR, including greater levels of interoperability and flexibility, enhanced application development capabilities for DTMF and speech applications and investment protection. As we look forward, the ability to standardize on the VoiceXML standard and to introduce new voice and video applications, with streamlined resources, will produce substantial benefits to carriers looking to compete more effectively in the communications market.

Q&A WITH HP

To provide a better understanding of the value of VoiceXML platforms, Ovum interviewed Christer Granberg, Solution Program Manager, HP Communications & Media Solutions.

What benefits do customers get from HP's offering of product and services?

HP Communications & Media Solutions provides a mature, field-proven and future-proof IVR consolidation architecture, powered by the HP Network IVR and the HP OpenCall Media Platform, which deliver ongoing returns and enable a more engaging end-user experience, HP Communications & Media Solutions has built a strong set of solutions augmented by an ecosystem of partners that spans the globe. This gives service providers the flexibility to choose the most compelling revenue-generating applications – from Prepaid IVR, next-generation messaging, Voice SMS, multimedia conferencing to voice and video portals and IVR for consumer and enterprise applications – to help them attract and retain customers and generate revenues. Voice technology also opens up an entirely new business opportunity for service providers to sell media resource hosting services to their enterprise customers who can set up their own IVR services without the need to invest in and maintain their own infrastructure – a very cost-effective, win-win business model.

How does HP's offering stack up against others in the IVR market?

HP Network IVR provides a future-proof and cost efficient way for service providers and enterprises to reduce operating expenses by replacing and consolidating legacy systems. The HP Network IVR is built on an open standards based architecture supporting VoiceXML, CCXML, and Java™ for application development. It includes the following components: HP Network IVR Service Execution Environment, HP OpenCall Studio Service Creation Environment, HP Call Detail Record Collection and Processing System, HP Media Content Manager, • HP OpenCall Media Platform, Automatic speech recognition/text-to-speech. The HP OpenCall Media Platform also includes Media Resource Function (MRF) and video capabilities that enable it to support IMS-based services. As a result, our customers can safely migrate IVR services from their legacy environment to a next-generation IP-based network. HP has a proven track record with over 750,000 IVR ports deployed in over 50 countries within more than 150 service providers. Backed by a world-class global delivery, support and services organization plus HP's deep network experience and industry knowledge, HP Communications & Media Solutions has a strong offering to help our customers meet their IVR replacement and consolidation needs.

What advantages can a service provider expect to gain in the short- and long-term as an HP customer?

HP Communications & Media Solutions has a long history of helping service providers with short and long-term gains. One example is a leading North American wireless service provider with more than 20 million end-user subscribers that was outgrowing its legacy IVR platform and needed to increase capacity in order to handle its rapidly growing subscriber usage traffic. This service provider also wanted to gain flexibility to efficiently offer not just new services in the near term, but also future 3G multimedia services. By implementing the HP IVR solutions, it was not only able to consolidate and centralize media resources; it was also poised to support next-generation services as they came online. Ultimately, the consolidated IVR solution allowed this service provider to reduce CAPEX and OPEX, and it is now able to host all services on a single platform. It improved its business agility, and enhanced its ability to rapidly launch and deploy both today's innovative services as well as next-generation services.

APPENDIX

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