Abstract

Communication Service Providers (CSP) across the globe are adopting new age strategies such as ‘Customer experience based differentiation’ and are focusing on transforming their customer interaction approaches through the collaboration & mash-up of multiple channels.

A customer’s experience through an IVR interaction really depends on who (customer/IVR) does most of the thinking during the dialogue? In order to deliver the right experience, the service providers have started evolving their legacy IVR systems into Smart IVRs. These intelligent IVRs take the onus away from the customers thus optimizing the interaction and providing a differentiated, unique & personalized customer experience. With the intelligence to think ahead of the customer, they have the ability to anticipate customer needs & present the most relevant options. The improved speed & accuracy with which these IVRs serve customers provides an impetus to the CSP’s overall strategy of taking the customer experience to a new level.

Built right, Smart IVRs can outperform your best performing agent. With the evolution of advanced speech technologies (e.g. ‘Natural language understanding’) coupled with smart design strategies (i.e. Next Generation IVRs) Smart IVRs have greatly improved the CSP’s customer engagement indices. This white paper discusses various strategies of implementing such effective tools which can completely transform the customer experience.
Developing and nurturing smarter IVRs is a complex affair and requires continual focus to deliver incremental improvements. These improvements evolve through multiple development cycles of identifying new patterns, building increased intelligence & measuring the outcomes. With this investment in time and budget should CSP’s even consider moving to such complex, sophisticated & intelligent Smart IVRs? However, the question CSP’s should ask is with increasing competition on their customer base can they afford not to provide a rich, coherent customer experience that retains customers, improves brand recall and net promoter scores and creates up sell and cross sell opportunities.

CSP’s are also looking to drive down costs by moving customers to low cost channels like IVR, Web chat etc. Hence contemporary IVR’s need to support complex functions and quick turnaround time to support business agility. Customers expect the touch points to be friendly and relevant. They expect interaction channels to be fully cognizant of their needs, interaction history across channels & expect to be served quickly & efficiently. To deliver best-in-class IVR experience CSP’s need to enrich the interaction content, at the same time minimize their overall costs.

The diagram 1.0 below depicts the key considerations for such an IVR system from both the customer and enterprise perspective.

Due to the recent economic downturn, CSP’s have become extremely cautious in their spending. They want to ensure that their budgets are appropriately spent with a focus on return of investment(ROI). IT solution investments must impact key areas such as customer loyalty, retention, improvement of the the average revenue per user and ultimately make a positive impact to the bottom line.
Table 1.1 below details Smart IVR’s impact on key customer and CSP considerations.

<table>
<thead>
<tr>
<th>Customer &amp; Telco Consideration</th>
<th>Impact Aspect &amp; Metrics</th>
<th>Technology adoption</th>
<th>How Smart IVR’s can help differentiate?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1st Gen. Directed Dialog</td>
<td>2nd Gen. NL Speech</td>
</tr>
<tr>
<td>Know me, Know my need</td>
<td>Ability to identify customer</td>
<td>Basic</td>
<td>Basic</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Need (to call) assessment</td>
<td>Static</td>
<td>Static</td>
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<tr>
<td>Smartly address my need</td>
<td>Efficiency (IVR time, drop outs, speed of answer, hold times, dead air, hold time)</td>
<td>Low</td>
<td>Medium</td>
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<tr>
<td></td>
<td>Effectiveness (FTR, Error prevention, zero outs, repeat calls reductions, automated with(out)Agent transfers)</td>
<td>User Input Dependent</td>
<td>User Input Dependent</td>
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<tr>
<td>Customer Experience based</td>
<td>Personalized, welcoming, appropriate</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Cost effectiveness</td>
<td>Cost per contact treatment</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Agility to adopt dynamic business needs</td>
<td>Control shifting from IT to business</td>
<td>Low</td>
<td>Medium</td>
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<td></td>
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<tr>
<td>Additional Revenue Generation channel</td>
<td>Ability to engage with customer and negotiate the upsell/cross-sell</td>
<td>No</td>
<td>Very Limited</td>
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</tbody>
</table>
In summary, there are pros and cons that CSP’s need to consider when adopting a Smart IVR approach. Some of these areas are shown in diagram 1.2.

- Lower TCO
- Increase Self Service Rates
- Reduce call duration (IVR AHT)
- Reduce misdirects
- Reduce Cost per call (overall)
- Increase Customer Retention and Loyalty
- Increase Right First time rates
- Handle Complex self-serve functions
- Increased cross-sell/up-sell rates

- Highly Complex IVR Systems
- Increased cost of IT Infrastructure
- Ongoing investment requirements

Diagram 1.2 Smart IVR Adoption Considerations

Getting Started
Core Guiding Principles

To adopt “Smart IVRs in an organization there are some core guiding principles that should be observed:

Know your customers thoroughly (360 degree view)

<table>
<thead>
<tr>
<th>Segment Customer’s Profiles (preferences, demographics, service profile, value based segmentation)</th>
<th>When &amp; How do they contact you? (need cycles, triggers to call, channel preferences)</th>
<th>Why do they contact you? (fault, upgrades etc)</th>
</tr>
</thead>
</table>

Design for Interaction Intuitiveness and Simplicity

- Smart IVR’s avoids confusion in the caller’s mind on how to use the application to cater their need by presenting options intuitively.
- There is little leeway in anticipating the wrong need, even once, this can cause frustration to customers.
- Don’t overly complicate your design – look for the optimum return on investment both from an IT and customer experience point of view.

Build to Support Agility & Smart Analytics

- Know what you want to measure and analyse. Create customer dashboards that can quickly and accurately measure effectiveness.
- Ensure you measure the effectiveness of IVR’s by correlating the call flow/IVR performance analytic outcomes with customer surveys.
- Ability to quickly turnaround tailored (optimized) callflows through configurability of pre-built components.
‘Smart’ Scenarios Identification

Identifying the Smart user scenarios which offer optimum return on investment both from an IT and customer experience point of view could get fairly complicated and requires a structured approach. Organization should consider not overly complicating their call flow design and keep it simple from customer perspective and weigh the options for RoI.

Here are some sample ‘Smart’ scenarios that you can consider for implementation from a communication service provider perspective. The following scenarios assume that the caller has already authenticated themselves on the IVR system. As soon as caller authenticates themselves on IVR it creates a dynamic call flow to ensure an effective and efficient outcome.

**Order Management**
- Identify, play welcome message for new customer or new service activations, upgrades etc
- Check for any pending order or pending dispatch (Technician, hardware) and provide status
- Be courteous to customer with pending cancellation orders. Present them retention offers

**Problem Management**
- Check for pending trouble ticket and offer status to the caller
- Consider special treatment for escalated tickets (i.e. missed SLA). i.e. transfer to agent
- IVR gets feedback of recently closed problem ticket
- Take the context from other channels and carry on problem resolution on IVR

**Payments Management**
- Provide offer of bill explanation for callers recently received bill
- Offer the facility to pay using the same payment mode as used last time
- Check for any billing/payment related issue
- Offer option to waive off financial charges of less than a preset limit (e.g. 5USD) and let customer pay the remainder of the bill on IVR

**Others (upsell/cross sell)**
- Offer personalized (unique) upsell options (e.g. upgrade existing service speed of your internet service)
- Personalized cross-sell (e.g. Do you know you can get Cable TV services along with your internet for just an additional 20 USD per month?)

*Sample Smart Scenarios*
Implementation Prioritization Considerations

To ensure the Smart IVR delivers an optimum ROI, organizations need to take a structured approach towards analyzing identified set of smart scenarios and prioritize implementations.

To be able to achieve this, each scenario should be objectively evaluated using what is called as ‘Smart IVR Applicability (SIA) Index’ for a scenario can be derived by following function:

$$\text{SIA Index} = \text{function (Call Volume, Cost to Serve, Response Predictability, Implementation Complexities, Customer Experience Impact, Customer Class)}$$

- **Call Volumes:** Consider picking up use cases with maximum number of call volume (historically) to get maximum return on investments (Cost reductions and customer experience enhancement).
- **Cost to Serve:** Consider use cases which have higher cost to serve through an agent (example payments, resolving service trouble etc).
- **Response Predictability (Confidence Levels):** Pick up use cases which are clean with high level of certainty of user’s need anticipation. If you are unable to decide with certainty, choose to ignore the use case.
- **Implementation Complexity:** Implementing certain use cases may be more complex than others. Consider piloting use cases with higher return and simpler implementations.
- **Customer Experience Impact:** Not all use cases would have same impact on customer experience. Consider moving impact up in your priority.
- **Customer Class:** If a particular use case is more relevant for “High Value” Customer segment, it should go higher up in the implementation priority.

Call Flow Design Considerations

Smart IVRs are very dynamic in nature and the call flows need to be determined in real time based on the need anticipation. These IVRs leverage ‘template driven architecture’ to support this. Some of the key call flow design considerations are:

- If your first attempt to anticipate the customer’s need doesn’t get aligned with their actual need, do not make a second attempt to anticipate immediately as it would end up frustrating your customer.
- Prioritize your call flow from customer perspective. You should move scenarios which are of more importance to customer, up in the call flow.
- Avoid up-sell/cross-sell attempts to a customer who have open issues with current service.

Smart IVR Architectural Considerations

Smart IVR ecosystem architectures are based on the following basic tenets of their ability to generate dynamic response, supporting business agility & contextualizing the conversation with IVR. Diagram below depicts a simplistic view of illustrative architecture of Smart IVR Eco-system.

It’s advisable to keep the core IVR application/other front end applications loosely coupled with back-end systems. Create a Business and Service layer to abstract the interface with back-end systems. Service Oriented Architecture works perfectly for Smart IVR implementation. These systems achieve context enablement by leveraging a central event model fed by relevant interactions from all customer interaction channels, back-end systems (OSS/BSS/CRM) & knowledge repositories. Lastly, externalizing decision making and ensuring extensibility of this layer would help leveraging it for other channels as well.

**Architect for extensibility, scalability and performance**

Consider moving decision making away from presentation layer by leveraging a Business Rule Management System (BRMS) to support business agility & ability to configure callflows without needing to deploy the IVR application. Think about centralizing the business logic and exposing it to Non-IVR touch points as well. Since the call flow in such application is driven by an event based model, these systems are best implemented using an external Business Rule Based Management System (BRMS). The role of a BRMS application in the overall IVR ecosystem is to facilitate unique call-flow creation (customer & context).

- Ability to implement complex business rules through structured ‘rules expression, sequencing and promotion.’ It’s the core of your system and it helps decide the call flow.
Business needs change adoptions through the ability to author and manage business rules with ease. It provides your business clients the freedom to manage and manipulate the call flows to cater to changing business needs. It helps business clients avoid waiting for the IT to deliver the changes as per their schedule even for routine changes.

- Must provide much needed scalability and acceptable performance of the BRMS execution engine. You just can’t afford a slow rule execution performance as it would lead to ‘dead air’ for the caller and confuse them.
- Quicker integration with your back-end systems with adequate security features. Smart IVR systems feed from multiple systems, then apply business logic to decide the call flow.

There are multiple Industry grade BRMS systems (e.g. IBM iLog, Fico Blaze) that are available in the market. It’s strongly advisable to pick the leading engine as this will minimize the execution delays and security issues in an IVR eco-system. Performance is the key – look for benchmarking a couple of the leading engines in your eco-system.

**Centralized, Comprehensive, Customer Event and Knowledge Store**

Smart IVR’s leverage the events captured in central customer event master database (DB). This DB receives feeds such as, recent customer interactions on touch points and feeds from various OSS/BSS/CRM systems. Here are some illustrative feeds that should be considered for capturing in the event master:

- Number of interactions per channel per need (reason!)
- Interaction effectiveness terms of success/failure of the interactions (outcome!)
- Channel efficiency (e.g. for an IVR channel - time spent on the channel, retries, timeouts etc.)
- Feeds derived from asynchronous channels such as email/fax/mail
- Events from OSS/BSS/CRM systems
  - Bill payment preferences
  - Outstanding order, Service cancellation request indicator
  - Open trouble tickets/Missed SLA indicator
  - New Customer/Service subscription/Change indicator (welcome message, thanking them for new business or ask customer if they are enjoying the service or having any issues with new service)
  - Preferred channel/Time of day/Day of week

There is a need to ensure the event information captured in this event store DB is accurate and able to provide sufficient details to enable call-flow decision making. The centralized knowledge repository could be leveraged by other customer touch points as well to be consistent and to provide uniformity during the customer interaction.
Conclusion

Building a ‘Smart IVR’ is complex and requires deep understanding of the human psychology, business domain & customer life cycle to effectively anticipate caller needs and deliver a differentiated experience to your customers. Call flow designs have to be clearly thought through based on the customer experience perspective. However, caution must be taken as poor, hurriedly built applications have a higher chance of failure than yielding the much needed outcomes.

Successful Smart IVR implementations critically depend on the availability of an Integrable IT Eco-system, i.e. A capability to expose captured customer interaction events to IVR eco-system. Secondly, enterprises must have the capability to capture & provide analytics of customer interactions and probable needs to call. Events for probable ‘need of call’ would be captured from various CRM/OSS/BSS systems and other interaction channels. Enterprises should have framework to profile customers based on their interests, service profile, value etc. Its also important to invest in latest technology such as speech (preferably NL) enabled IVR platform with an ability to process dynamic VXML/scripting supported by an industry grade Rule based system. It’s important that implication of legal and regulatory compliance should be factored into, especially during up-sell/cross-sell use cases/financial transaction scenarios.

With the advances of commercial deployments like speech biometric authentication & emotion detection Smart IVR systems will evolve to new levels. Intelligent IVR systems, if well thought through and implemented successfully can help organizations gain competitive edge through customer experience differentiation and increased brand loyalty.

About the Author

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Rajeev has 14 years of rich experience in delivering customer experience enhancements through innovative IT solutions to leading Communication Service Providers (CSPs) around the globe. Currently, he is leading a portfolio in Customer Care Technologies domain at ECS business unit of Infosys. Rajeev has played various roles from solution designer, program management, consulting and pre-sales during his previous assignments. He has helped several global CSPs in the areas of process improvements and enhancing operational efficiency in the Customer Care Technologies and OSS domain.

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