



Let's Solve

Whitepaper

AI-led Automation to transform Technical Assistance Center



A Larsen & Toubro
Group Company

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1. What are we solving for?

We are living in a time of growing customer demands, and every organization is striving to become more customer-centric. Customer Service plays a vital role in attainment of this goal. However, the current operation is marred by numerous challenges resulting in poor customer experience and engagement.

The challenge every company is trying to solve is how to keep the cost of operations down as they strive to improve customer experience. Throwing more call centers and support engineers at the challenge, is clearly not the solution that has worked for organizations. Also, due to a huge churn in the workforce, competency of the operations team is always in a state of flux, resulting in productivity of the team not peaking to the potential, where organizations can reap benefits. The other problem organizations are trying to tackle is to modernize the operations and leverage new-age technologies like IoT, Artificial

Intelligence, AR/VR, etc. The plethora of technologies is clouding organizations' judgment in adopting the right technology that will work within their organizational context. The organization needs to identify the right technology intervention at the appropriate instance within the customer journey, whether it's of the end customer or the support engineer.

Finally, the problem that the organization is trying to solve is the realization of value. Finding the right metrics to measure the success of these transformative initiatives has been a challenge. Traditional metrics like NPS, FTE reduction, TCO might not be enough or relevant in today's modern business models. Organizations need to find the right mix that fits their operating environment and use it to build the necessary business case.

2. Trends & Point of View

Customer Service has never been more important than in today's competitive market. Enterprises are beginning to understand that customer experience is the difference between social media shares and bad publicity, between retaining customers or handing them on a platter to your competition.

Enterprises have been managing operations the same way for quite some time. Traditionally, revamping operations involved recruiting, training, governing, and managing customer-facing support engineers. Enterprises are missing out on a huge opportunity brought about by

advancements in technology, more specifically, advancements in cognitive computing. There is a need for enterprises to view operations from various dimensions such as technology landscape, business process KPIs, and end user personas, and look for opportunities to transform the existing operating model into a next-generation operating model, delivering rich and engaging experiences to the end user, along with amplifying productivity of support engineers.

The trend is to enable the end user to adequately support themselves and be able to resolve issues at the same quality and speed of a proficient support engineer. When end users have the agency and knowledge base with which they can resolve their own support issues without involving a support engineer, it's a win-win situation for the end user and the enterprise.

Support engineers can reserve their valuable time for high-tier problems and end users can resume their life with speed and a sense of personal accomplishment. The Return on Investment (RoI) calculations are way off the mark, prompting enterprises to invest in building a presence in consumer messaging apps, such as Facebook Messenger and WeChat to reach customers, opening multiple channels for customers to reach out based on their personal preference.

Enterprises are combining best-in-class digital levers (AI & analytics, automation, etc.) with technology, re-imagined operating models, domain and process expertise. For example, enterprises are investing in intelligent service desk solutions that consist of virtual assistants for providing intuitive and personalized conversations. Instead of navigating websites or reading through an entire FAQ page, virtual assistants allow users to ask simple questions to arrive at straightforward answers, resulting in high satisfaction amongst end users.

Data is becoming a key ingredient in driving business strategies. A data-driven customer service operation is fast gaining adoption. Managing Knowledge is an important function of the Operations Manager. With thousands of SOPs

and process handbooks, knowledge management still appears to be very elusive. Enterprises are using predictive analytics, machine learning and other smart technologies to build their knowledge base from historical ticket data, SOP, specification documents, machine logs, etc. Therefore, the knowledge base becomes the basis of driving virtual assistance for end-user self-service and accelerating diagnosis and resolution of tickets by support engineers.

3. TAC Support Engineer

Service Operation discipline is responsible for the economical & productive operation of Customer Service, including handling incidents & problems (repetitive failures), along with Operations Control. Furthermore, it is responsible for controlling user permissions/profile and service requests at an agreed level to business users & customers. This discipline is also extended for Technical Assistance Center (TAC) to provide technical support to customers, partners, and resellers for delivered equipment (Routers, Network, Laptops) under the active technical service contract.

The TAC, run by a specialized skilled team, needs to deliver constant agreed levels of service in a continually evolving technical and organizational environment, by balancing quality of service vs cost of service, reactive vs proactive, stability vs responsiveness, along with being agile to enable business outcomes.

3.1 Key Personas

Below are the Key Support Personas and their scope of work in the TAC-

Persona	Service Area	Activities
Service Desk Analyst	<ol style="list-style-type: none"> 1. Case Management – 1st Level 2. Access Management – 1st Level 3. Knowledge Management 	<ol style="list-style-type: none"> 1. Case (Service Request) Identification & Logging 2. Case Classification & Prioritization (service level assignment) 3. Case 1st Level analysis & diagnostics 4. Case Resolution for standard errors 5. Resolve Std Service Request – ‘How to’ 6. Routing cases to next level (via live call or call back mode) 7. Case closure. 8. Initiate user satisfaction survey 9. SOP / KEDB Update
Specialist / SME	<ol style="list-style-type: none"> 1. Case Management 2. Problem Management 3. Knowledge Management 	<ol style="list-style-type: none"> 1. Resolution of cases (Incident / Service Request) 2. Validates the resolution of cases 3. Discover Problems (frequent failures) 4. Fix / Change/Enhance to close the ‘Problem’ 5. SOP / KEDB Update 6. Q&A Forum response
Operation Manager / TAC Manager	Owns all service areas including operation controls	<ol style="list-style-type: none"> 1. Governance of Service Metrics 2. Case prioritization along with business LOB 3. Case routing 4. Analysis of trends, User Satisfaction Survey results 5. Discover improvement areas 6. SOP / KEDB Update

3.2 User Journey

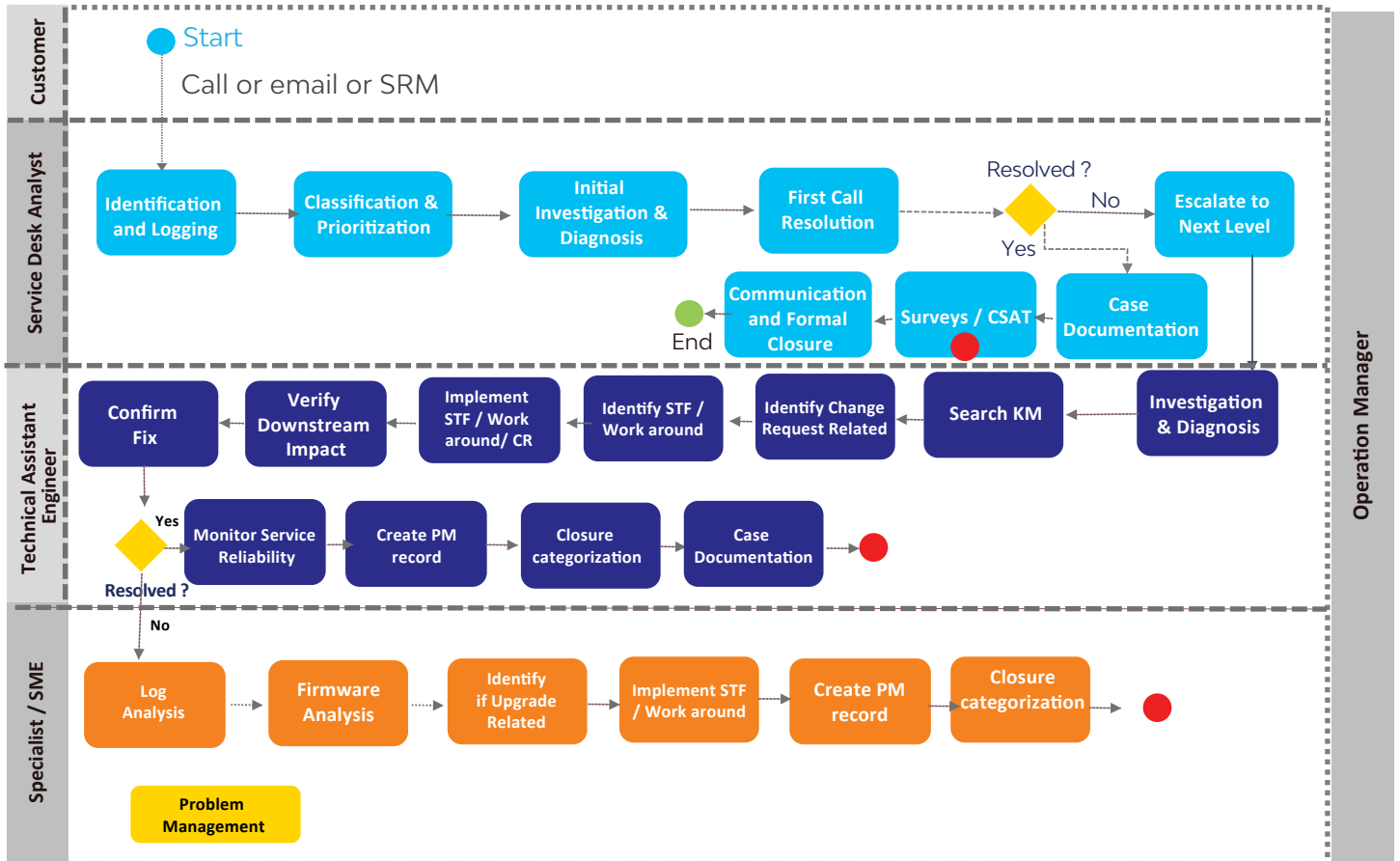


Fig 1: Support Persona Journey in Case Management

Let's see how each support persona orchestrates to manage a case and restore 'business as usual', as quickly as possible and minimize / eliminate adverse impact on business.

Typically, users open TAC Cases for:

1. Technical assistance for the product
2. RMAs/DOAs
3. Software licensing/release keys

1. Case Identification & Logging: Communication channels: Email, phone calls or web chats are the modes used for case identification, and cases are logged in the TAC service request tool. For globally placed businesses, a consolidated Customer Interaction Network (CIN) can be the single point of contact for customers/partners for technical assistance.

2. Case Classification & Prioritization: The Service Desk Analyst will capture case details (product code, configuration settings, steps followed by user, symptoms) to classify and prioritize the case.

3. Case Analysis & Diagnostics: The Service Desk Analyst will refer SOPs or KEDB for first-level analysis to identify root cause. Fact findings and troubleshooting is comparatively longer than traditional IT incident analysis.

4. Case Resolution: In case the Service Desk Analyst is enabled with standard resolution (e.g. Administrative activities, Service Restart Script or workarounds, etc.), he will run the resolution and close the case or escalate it to a Technical Assistant Engineer (TAE). TAE will perform step 3 and 4 to resolve the Case. As part of the case resolution, TAE may initiate Return Procedure for RMA or DOA (Dead on Arrival) products. In case of an unresolved case, it will be escalated to specialized domain experts for final resolution of the case. The SME will troubleshoot and implement fixes either via remote portals or via onsite field service (field engineers). All Support Engineers will be responsible for updating technical content for online help, update SOPs with the latest information, and update KEDB at every stage along with case details updates in TAC service request tool - Action plan, Handoff notes.

5. Case Closure: Upon receiving confirmation from the user on case resolution and end-user is satisfied and in agreement, Service Desk Analyst will close the case in the tool.

6. User Satisfaction Survey: The Service Desk Analyst will initiate the user satisfaction survey. This is not a mandatory step, but this is one of the

effective ways to build and maintain positive relationships with customers and identify service improvement areas.

For effective, reliable and faster case management, the Operation Manager plays an important role in governing case classification, prioritization and routing it to the right team. He continues to analyze historical data, trends and discovers hotspots for service improvement - scope of automation, process optimization, enabling First Call Resolution. The Operation Manager will create governance reports either by leveraging the TAC service request tool default reporting dashboard or Microsoft apps (excel, ppt).

Major Case Team: Occasionally major cases will occur, a SWAT team will be formed and will be dismantled once the case is closed. Though each organization has a specific criterion to identify major cases, general characteristics include:

1. Large number of impacted users
2. Downtime cost is significant for business
3. The effort to restore 'Business as Usual' service is longer than agreed service levels

3.3 Automation & AI Interventions

Continuous innovation in digitization, artificial intelligence, automation & analytics is reshaping business – the orbit is shifting from 'Business as Usual' or 'Operation as Usual' to 'Business Transformation'. Harnessing these interventions at different stages of the case life cycle will unlock the following benefits in Operations related to the Support Persona Journey –

1. First call resolution
2. Faster case resolution
3. Improving Support Persona & business user experience
4. Improving ROI from technology investments

Below are the interventions and outcomes in the case management life cycle :

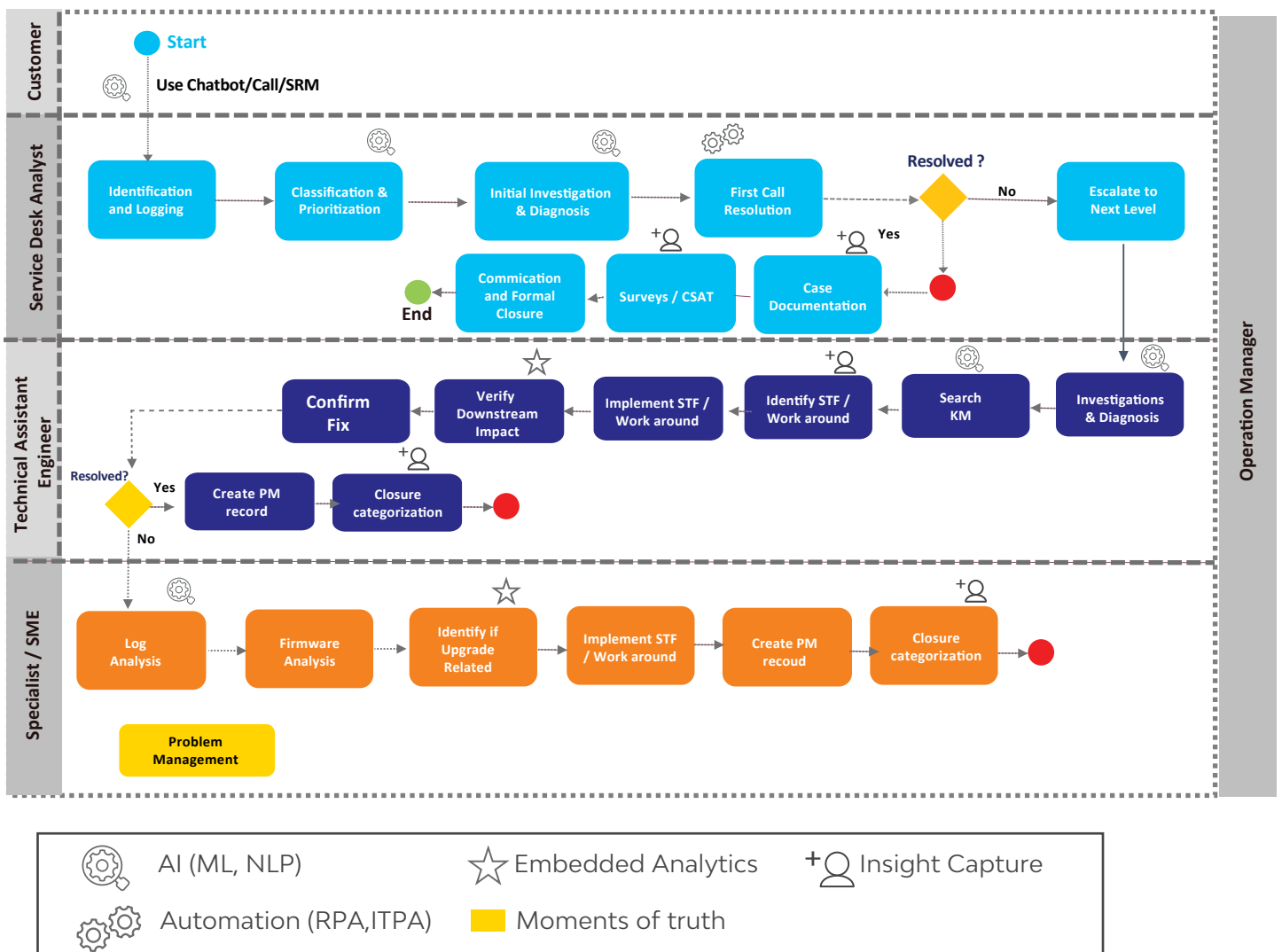


Fig 2: AI Interventions Support Persona Journey in Case Management



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Intervention	Where to Apply	How it is Applied	Outcome
AI-powered email support	1. Customer raising case via email	1. Email support to customer can be made faster and contextual with AI- (ML + NLP) powered solution which can make suggestion, guide to relevant help article (by gathering information from CRM, history cases, texts in email) while drafting the response for customer inquiries.	1. Response to customer email queries more relevant and increase customer satisfaction
ML & NLP-based Auto Dispatcher -	1. Case Classification 2. Auto Dispatch	1. ML+NLP-powered solution to auto dispatch of cases to right team, based on learning from past symptoms/cases on real- time basis.	1. Assignment & Escalation to the right team
ML & NLP-driven Command Center	1. Case Analysis & diagnostics 2. Case Resolution 3. Governance	1. First-level root cause analysis of Cases based on trends (leveraging KEDB, bug lists, Patches, etc.) and text analytics (NLP). 2. Trigger configured resolution BOT or provide ML-based assistance in case resolution by leveraging KEDB / SOPs. 3. AI-powered recommendation of resolution to engineer by leveraging similar cases, online help, product configurations etc. 4. Capture data continuously for retraining ML algorithm for right actions. 5. Establish real-time service performance, SLA reporting.	1. Faster case analysis & Diagnostics 2. Faster incident resolution 3. Improved persona experience – Service Desk Analyst, Technical Assistant Engineer, Ops Manager.
Resolution BOTs	1. Case Resolution	1. Automated resolution workflows/ scripts are integrated with Command Center or Assisted Chat interface to enable support personnel to trigger resolution in single click. 2. In case of definite root cause & resolution, straight through resolution will be triggered. 3. Leveraging RPA & AI to automate SOPs as well as capture data for retraining with real-time data for continuous improvement.	1. First Call Resolution 2. Faster incident resolution 3. Improved persona experience – Service Desk Analyst, Technical Assistant Engineer, SME

<p>Analytics</p>	<ol style="list-style-type: none"> 1. Case resolution 2. Knowledge Management 3. Problem Management 4. Transition Management 	<p>Applying Analytics and ML to get data insights / trends from operation data (case dump, CMDB dump, KEDB, SOPs etc.) to-</p> <ol style="list-style-type: none"> 1. Identify automation / improvement hot spots. 2. Prediction of cases & achieve proactive resolution, based on customer information and history data. 3. Identify Problem from frequent failures/trends 4. Achieve NLP-based knowledge asset tagging and providing recommendation of relevant knowledge asset to investigate / resolve incident/problem. 5. Faster knowledge transition 	<ol style="list-style-type: none"> 1. Faster case resolution 2. Improved persona experience – Service Desk Analyst, Technical Assistant Engineer, SME, Operation Manager.
<p>Sensors</p>	<ol style="list-style-type: none"> 1. Devices 	<ol style="list-style-type: none"> 1. Sensor can send data / information to central platform. This information can be used to troubleshoot the case. 	<ol style="list-style-type: none"> 1. Faster Case troubleshooting and closure of the case.
<p>AI-powered Customer Satisfaction Survey</p>	<p>Surveys / CSAT</p>	<ol style="list-style-type: none"> 1. AI-powered Chatbot can create personalized and interactive customer satisfaction surveys by dynamically including customer- specific context from CRM or history cases, analyze the response and design follow up questions to get actionable insight. 	<ol style="list-style-type: none"> 1. Capture data to have accurate CSAT and provide insights for further customer loyalty improvement.

AI & ML-powered solutions/tools are straining traditional performance, service management strategies to the break point and improving persona (concentration & experience) in operations. Below is persona constitution depicting the impact of automation on it.



Fig 3 : Team concentration while AI & ML taking charge of TAC

In a simple model with very limited pointed automation, overall management of the case life cycle is done manually.

As Automation, AI & ML penetrate the case management lifecycle, 30-60% of the dispatch and resolution activities will be eliminated in a few months. Thus, reduction in service desk analyst & BOT taking over the activities will be seen in around six months and will continue as we get matured in automation. At the same time, increase in Technical Assistant Engineer strength will be seen, as they start handling complex cases faster, previously handled by a specialist team.

The specialist team concentration will reduce and get freed up for more strategic activities over the period with continuous automation. Continuous knowledge harvesting and knowledge nugget creation via Analytics, AI & ML will empower end-users to 'self-triage and resolve' the anomalies and thus eliminate cases in the value chain.

4. Customer Journey

The key success factor of Technical Assistance Center, and for that matter any business, is how good the customer experience is – it is all about catering and caring for customers' needs in a way that allows them to feel confident with the process and path to resolution. Let's try to capture the customer journey for Dead on Arrival (DOA) product scenarios.

4.1 User Journey

1. The customer experiences functional failures during the initial power on/installation, and calls the designated center for technical support. The TAC engineer attending the customer call will raise a case on his behalf. Alternatively, the customer may access the TAC service request tool to open case.
2. The customer must be ready with all preliminary information – device model, observed behavior, step followed, warranty period, etc.
3. The TAC engineer will acknowledge & qualify the case as DOA, based on terms and conditions and check on warranty period information.
4. The TAC engineer will converse with the customer to gather information – For e.g. model #, configuration, steps followed to install the device.
5. The customer is entitled to a replacement of DOA item free of charge if it is under warranty terms & conditions.
6. Or, if during inspection TAC engineer identify that fault is not covered under warranty, the customer will cover the repair and replacement cost of the parts/device.
7. The TAC engineer will provide an RMA order # to the customer.
8. The customer will keep tracking the case/RMA either via an online portal or by calling the TAC center.
9. The customer also must return the faulty product within agreed days (normally it is 30 days) from the day of filling RMA.
10. In certain cases, a field engineer will visit the customer onsite to install the device and resolve the case.
11. The TAC team will contact the customer for final confirmation and close the case.

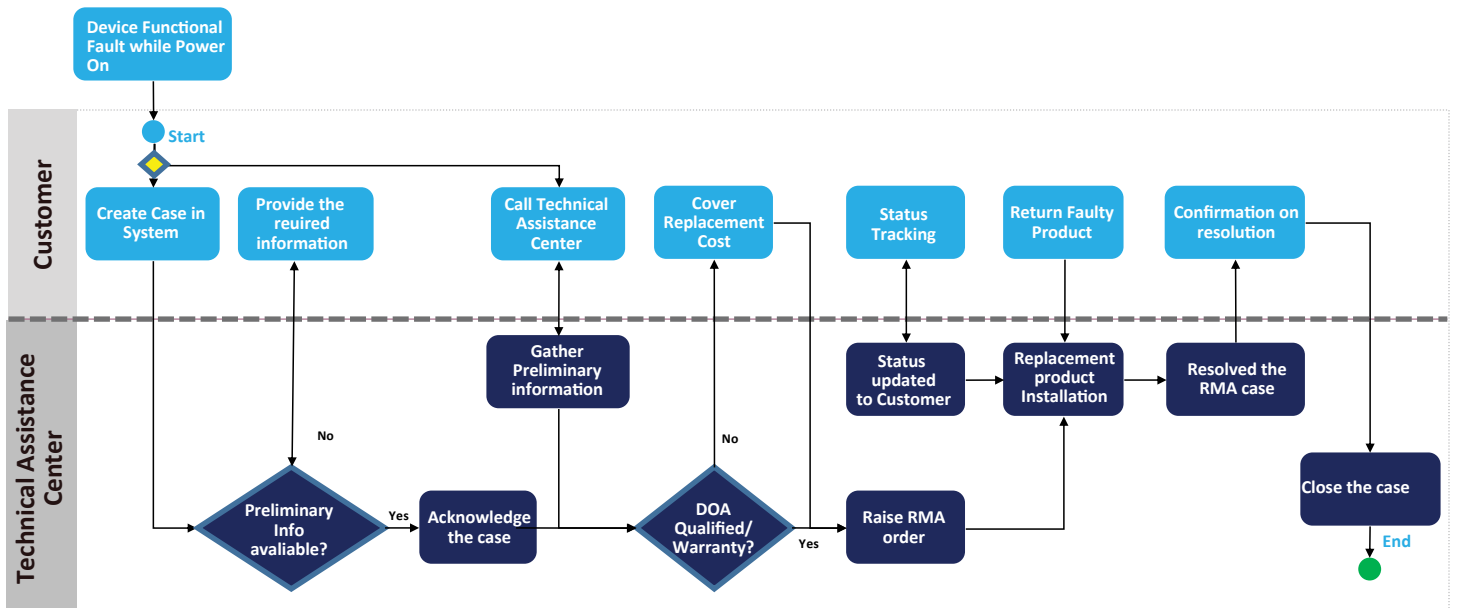


Fig 4: Customer Journey in Case Management

4.2 Automation & AI Interventions

Automation & AI can be successfully employed to provide intelligent, convenient and informed customer experiences in the above DOA product scenario.

Below are the interventions that can be applied to improve the overall cycle and customer experience.

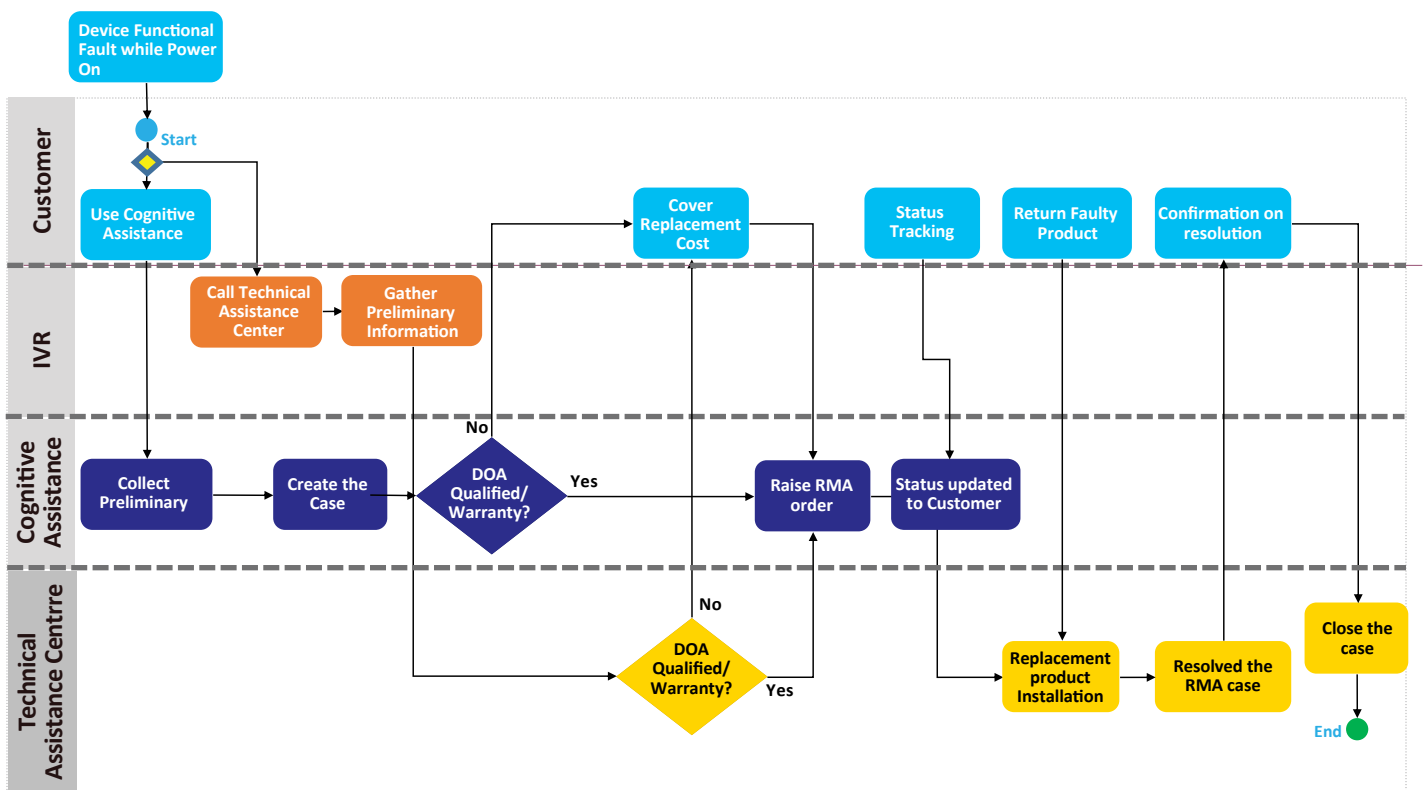


Fig 5: AI Enabled Support Persona Journey in Case Management

Intervention	Where to Apply	How it is Applied	Outcome
Cognitive Assistant	<ol style="list-style-type: none"> 1. Case Logging 2. RMA Order Logging 3. Gather preliminary Case information 4. Qualify DOA 5. Qualify Warranty Period 	<ol style="list-style-type: none"> 1. AI-powered self-service portal or Chat interface to provide guided conversation or event-based contextual help to customer. 2. Raise case automatically in TAC Service Request tool for unresolved scenarios. 3. AI-powered Recommendation on online help or forum discussion to user. 	<ol style="list-style-type: none"> 1. Case elimination by resolving "How to" or basic feature questions 2. Minimal TAC touchpoint for Customer 3. Faster Case resolution 4. 24X7 availability
NLP-powered Knowledge Asset Tagging	<ol style="list-style-type: none"> 1. Online Help 	<ol style="list-style-type: none"> 1. NLP-powered Knowledge Asset Tagging helps in faster search of content / FAQs for customers, based on text provided by user. 2. Cognitive Assistance leverages this feature to recommend contextual meaningful guidance to customer. 	<ol style="list-style-type: none"> 1. Faster relevant Content Search 2. Self Help
IVR	<ol style="list-style-type: none"> 1. First -level customer call can be handled by IVR. 2. Collect Preliminary Information of customer. 	<ol style="list-style-type: none"> 1. Queries to collect information from Customer will be maintained in system with response options based on trends /history. 2. AI-centric speech analytics API can tap into the insights of phone conversation and provide online help for first call resolution. 3. Route the call to TAC engineer for further execution. 	<ol style="list-style-type: none"> 1. Minimal TAC touchpoint 2. First call resolution
AI-powered CRM integration	<ol style="list-style-type: none"> 1. Contextual & Personalized Customer Service 	<ol style="list-style-type: none"> 1. CRM data will be integrated real-time with Cognitive Assistant to collect preliminary information about customer and device /service purchased to limit queries to customer. 2. Real-time two-way integration with IVR will help in get customer data to converse and provide relevant follow up questions to gather data. Same time, customer data will be fed back to CRM. (Ref Fig 6) 	<ol style="list-style-type: none"> 1. Limited questions asked to Customer for services they are looking for. 2. Customer experience will be improved. 3. Lesser customer touchpoints with TAC.

For retail customers, CRM/TAC service request tool can also be integrated with WhatsApp business solution, where customer can opt for receiving notification on purchase order, warranty/guaranty receipts, case status, product upgrade, new offers, etc.

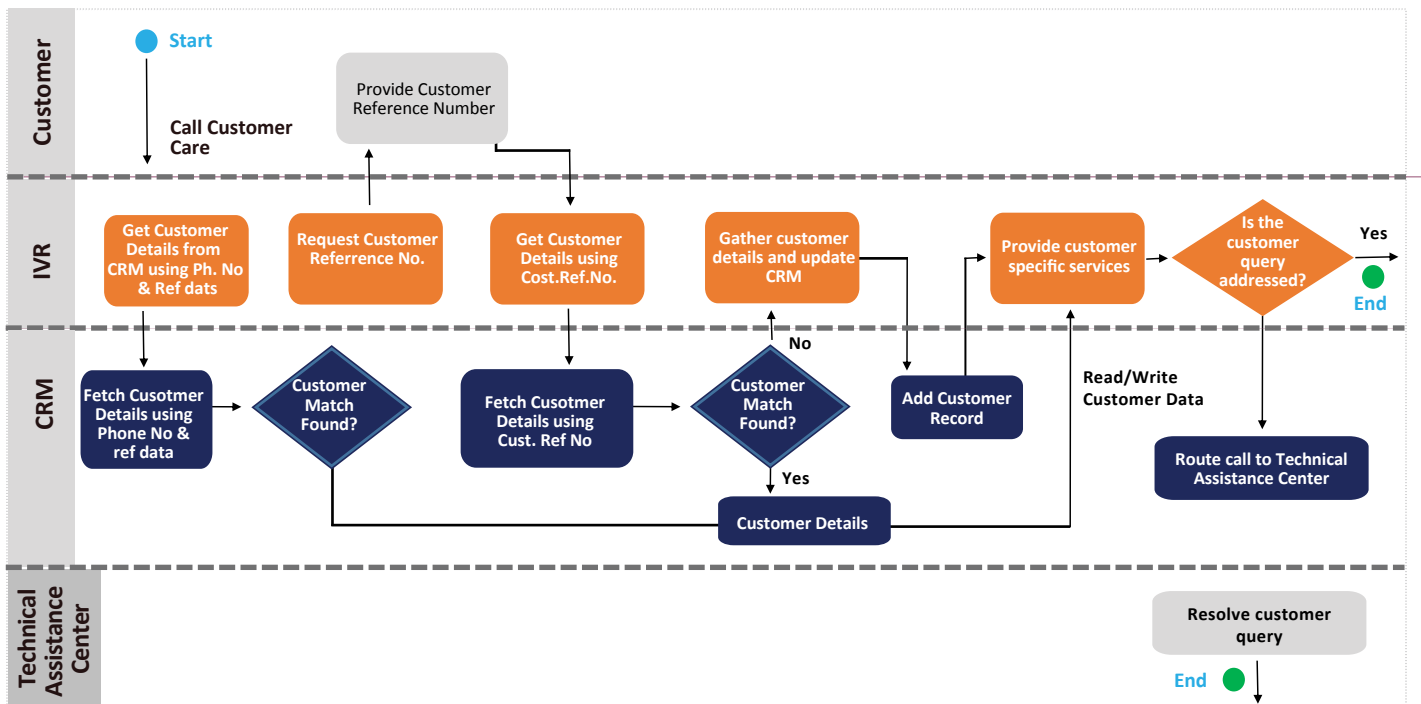


Fig 6: AI-enabled Support Persona Journey in Case Management

5. Best Practices

- **Right Solutions/Platform:** Selecting the right tool/solution is the key factor that guarantees the success of improvement & transformation of service.

- o Conducting POCs & Pilot to validate the fitment of tool & solutions in ecosystem

- o Consolidating different automations for reducing technical debt

With current dynamics, customer should be offered multi-channel tech support including live chat. Maintaining FAQ and online help is top priority for encouraging customer self-help.

- **Automation CoE:** An Automation Center of Excellence goes beyond seeing automation as a tool or tactic for streamlining individual tasks and looks at the bigger picture. The CoE treats enterprise automation as an ongoing project requiring planning, testing, and regular evaluation.

- **Change Management:** Implementing automation, by nature, is about making a change in established practices and processes within an enterprise. Employees will ultimately need to change how they do their jobs. Without it, automation – like nearly any other major technology – can create negative disruptions. Before large-scale deployment, therefore, team and enterprise leaders need to get out in front of these potential shifts by analyzing just what effects automation may have on their enterprise’s basic culture. This way, they can be in a position where they’re proactively directing those changes so the organization does more than to just optimize workflows, and helps evolve the workplace in a good direction as well.

- **Outcomes focus:** You need to clearly define the parameters against which you can measure the success of your test automation strategy. You need to be specific while defining the target.
- **Metrics:** Whenever you identify an opportunity for automation, make sure you benchmark the existing process before you develop the automation. This will help you articulate the value of the automation to the organization in meaningful terms once you're done. Any deviation between expected outcomes and post-project reality might be highlighting a deviation between the true business needs of your user base and your automation work. Take whatever you learn and roll it into your future strategy planning.

6. Analyst View points

Gartner predicts that 25% of Customer Service Operations will use [Virtual Customer Assistants \(VCAs\) by 2020](#)

According to Gartner, more than half of the organizations have already invested in VCAs for customer service, realizing advantages of automated self-service, together with an ability to escalate to a human agent in complex situations. Gartner predicts the proliferation of digital channels for self-service and the demand to move away from human, face-to-face to Text or voice-based interactions. Gartner predicts that by 2020, augmented reality, virtual reality, and mixed reality immersive solutions will become mainstream to improve customer experience and provide immersive self-service.

According to the report ["Charting the future of customer care through a core optimization philosophy"](#) by McKinsey executives are building their operations strategy around four different levers:

a) Eliminate or reduce inbound cases:

Enterprises are adopting service designs driven by simplicity and lower costs while reducing the need for support engineers to handle low-value calls by directing traffic to digital and self-service channels and striking the optimal balance between digital and human interaction.

b) Rethink customer engagement for high-end customized experiences:

Map customer and support engineer journey using design thinking to reconfigure traditional customer care and enhance customer experiences.

c) Wisely choose technology stack that serves a purpose instead of marketing hype:

The proliferation of new customer-care technologies and the availability of cloud computing have dramatically accelerated implementation timelines. Enterprises need to choose wisely from the myriad technologies that help in areas like insights or behavioral routing software, artificial-intelligence agents and visualization.

d) Turning operations into a revenue-generating and growth operating model from a cost center:

Adopt a proactive service-to-solution customer-engaging approach using segmentation and analytics to better understand the needs of customers. With these insights, companies can tailor product and service offers to specific customers. Few executives are considering a shift from outsourcing to in-house support by building customized capabilities.

7. Conclusion

At a time when AI, automation, and cloud computing are transforming businesses across the globe, it is important for the Customer Service industry to rethink its strategies in line with superior customer experiences. This is particularly relevant given that in today's highly competitive and dynamic market environment, customer experiences are extremely important and can offer a genuine competitive advantage. This is why, above and beyond traditional models, businesses are looking at various tools and technologies to envision a meaningful digital transformation.

In the Customer Service industry, modern contact centers can be empowered and reimaged by several cutting-edge tools and technologies. This, in collaboration with strategic human intervention, can improve Quality of Experience, redirect resources to more critical tasks, boost RoI, and optimize operational efficiencies. However, this journey must be undertaken with a focus on the actual applicability of the selected technology and its pragmatic integration with the overarching enterprise ecosystem. This will have a lasting impact on both productivity and profitability, entrenching any solution selected for implementation by the organization into their larger operating philosophy.

8. Acronyms

- AI: Artificial Intelligence
- AR: Augmented Reality
- CIN: Customer Interaction Network
- CMDB: Configuration Management Database
- DOA: Dead On Arrival
- FTE: Full Time Equivalent
- IOT: Internet Of Things
- KEDB: Known Error Database
- KPI: Key Performance Indicator
- ML: Machine Learning
- NLP: Natural Language Processing
- NPS: Net Promoter Score
- RMA: Return Merchandise Authorization
- ROI: Return On Investment
- RPA: Robotic Process Automation
- SLA: Service Level Agreement
- SME: Subject Matter Expert
- SOP: Standard Operating Procedure
- TAC: Technical Assistance Center
- TAE: Technical Assistant Engineer
- TCO: Total Cost of Ownership
- VR: Virtual Reality

About the Authors



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Vijay has versatile experience of more than 14+ years in IT Transformation, Automation, AI. At heart, Vijay is a technologist who works with global companies to find solutions that help them constantly stay ahead of their competition.



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