

Transforming Customer Experience with Intelligent Dispatch Decisions



Annual Savings



Improved Accuracy



First-time Fix



Faster Issue Resolution



#Data4AI

Problem Statement

You're not alone. Multiple technician visits, or 'truck rolls' for resolving a single issue, lead to an unpleasant experience for everyone involved. Customers often end up waiting for long periods, and businesses bear the brunt of inflated operational costs and a damaged reputation. Minimizing truck rolls is a critical goal for any service-based organization.

Client

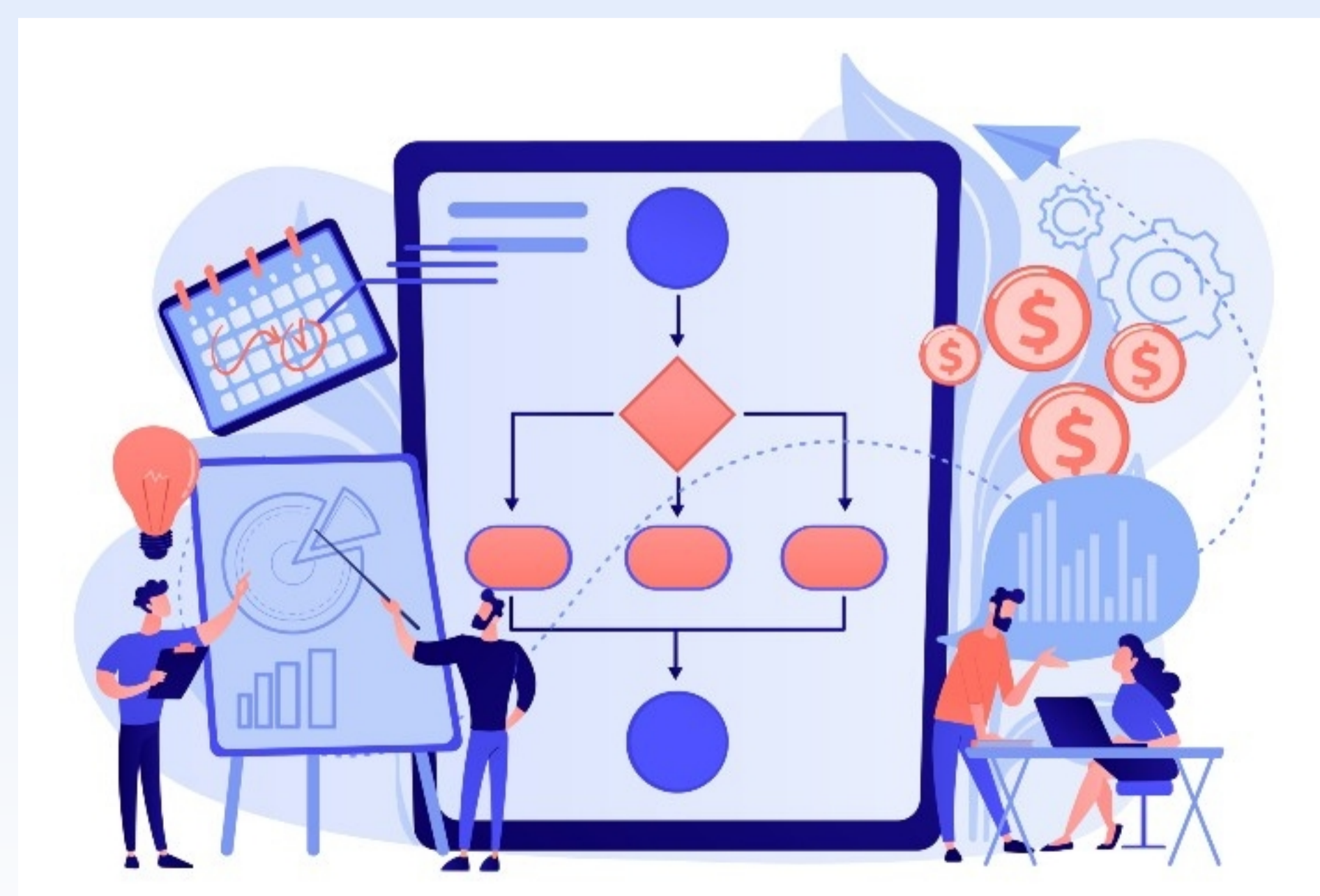
A leading US-based broadband provider was experiencing a high volume of truck rolls (around 30%) that were later determined unnecessary. The root cause was a rule-based issue classification system that lacked context and flexibility, forcing agents to rely on limited IVR inputs and manual judgment. This led to frequent misdiagnoses, repeated service calls, and declining first-time fix rates.

Business Need

To address these inefficiencies and improve service outcomes, the company needed a smarter, real-time decision-support system that helped optimize its remote operations.

A solution that could:

- Accurately assess service issues
- Improve first-time resolution rates
- Reduce the number of truck rolls
- Integrate into existing support workflows without service disruption
- Provide intelligent, data-driven recommendations placing agents in control
- Scale across service teams and support centres for consistent, enterprise-wide adoption



Facing similar challenges?

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Solution

Innominds engineered a comprehensive, AI-powered solution that seamlessly integrated into the client's support ecosystem—enabling agents with real-time insights for faster, more accurate dispatch decisions. The solution addressed technical, operational, and scalability needs through the following components:



Device Definition and Signal Monitoring

The system focused on modems deployed at customer premises, the primary telemetry source for evaluating service quality. It continuously captures upstream and downstream signal metrics, including receive levels, transmit power, and signal-to-noise ratios—key predictors

Real-Time Dispatch Decisioning

- Developed an AI model to process live modem signal data and return instant recommendations for technician visit
- Embedded the decision objective directly into the support workflow via a human-in-the-loop model, with AI based guidance empowering customer service agents with decision-making.

AI/ML Engine Optimized for Accuracy

- Replaced static rule logic with a machine learning model integrated into the IVR system, enabling dynamic and context-aware dispatch recommendations
- Trained the model on historical signal data (e.g., averages, standard deviations, error rates)
- Introduced fiber node health checks to reduce false positives caused by broader regional outages
- Guided feature selection through Chi-squared tests and correlation analysis for predictive performance improvement

Feedback Loop for Continuous Learning

- Collected and fed technician resolution feedback back into the system, after each dispatch.
- Used the feedback loop to refine and retrain the model, enabling continuous improvement and adaptation to field conditions

Scalable and Reliable ML Solution

- Built using Ensemble Modeling approach LightGBM and optimized with Optuna for hyperparameter tuning
- Deployed on Azure Databricks, with MLflow managing the full model lifecycle
- Implemented automated pipelines for continuous training, real-time inference, and bulk prediction processing

MACHINE
LEARNING

Value Delivered

The AI-powered dispatch system delivered measurable impact across cost, efficiency, and customer satisfaction:

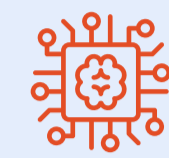
- **~\$0.5 Mn annual savings** through significant cutdown in technician visits
- **Decision accuracy improved from 75% to 95%**, enabling more precise issue classification
- **Higher first-time fix rates**, reducing repeat service calls
- **Faster issue resolution**, enhancing customer satisfaction

Tools & Technologies

To deliver a scalable and production-grade solution, Innominds leveraged a modern, cloud-based architecture:



Cloud & ML Ops: Azure Databricks, MLflow



ML Modeling: LightGBM, Optuna



Data Processing: PySpark, SQL, Hive Tables, Notebooks



Integration: REST API



Languages: Python

The solution became a core decision-support engine within the client's support center—empowering agents, improving responsiveness, and unlocking daily operational value



Transform Field Operations with AI!

Reduce Costs. Resolve Challenges.

Visit www.innominds.com or contact marketing@innominds.com

