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# AI strategy to build customer resilience during outages

Adopt an AI-powered Total Outage Management Framework to deliver near real-time Notifications and Estimated Time of Resolution (ETR) for Service Disruptions

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# Outages are a reality of the digital age, but their impact on your customer satisfaction and loyalty doesn't have to be

31% of businesses reported internet outages costing over $1.2 Mn

21% of telco customers leave after a single negative experience

30 Mn consumers suffered a broadband outage for 3+ hrs in 2023-24 in the UK

**CSPs in the news for outages**

- **KDDI Corp**, Japan's 2nd largest mobile carrier, experienced a 60hr n/w disruption
- **Rogers**, one of Canada's largest telcos, experienced a nationwide outage for 17hrs
- The US FCC fined **Verizon, AT&T**, and others over $6 Mn for failed 911 calls

Customers are turning to platforms like Downdetector and Twitter to voice frustrations due to rising expectations for **real-time communication** & **transparency during outages**.

**CSPs struggle to manage customer satisfaction during outages, hampered by fragmented systems & manual processes**

- ✗ Lack of proactive outage updates to customers, including ETR
- ✗ Absence of Self-Service Tools for Independent Service Status Verification
- ✗ No consistent communication for unified outage updates across customer touchpoints

**Impact on CSPs:**
**From Frustration to Disloyalty**

Loss of productivity due to high inbound calls; Heightened customer anxiety; Damage to brand reputation; Increased customer churn

With 5G and converged networks, outages will be more complex, making manual approaches inadequate.

In network outage scenarios, AI/Gen-AI can enhance responsiveness and personalization, providing tailored recommendations and solutions to individual customers.

# Transform outage management with a scalable, AI-powered **Total Outage Management Framework** (TOMF) for proactive notifications

The framework, **driven by AI Outage Managers**, operates as an **intelligent, scalable**, **multi-platform,** and **self-learning system.** It manages real-time outages with minimal human intervention by automating outage monitoring, generating notifications, and streaming real-time data.

### Smart Notification (SmartNoti)

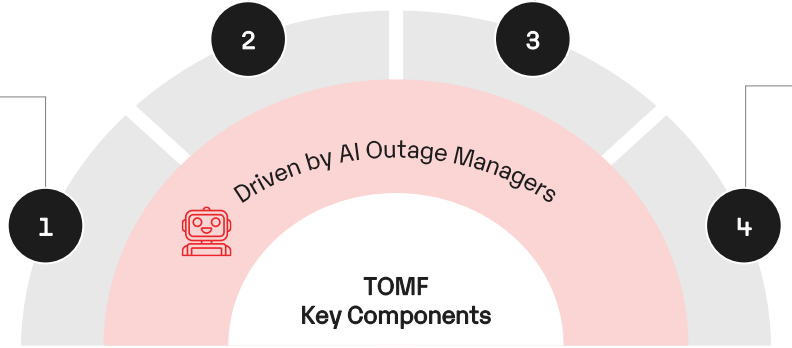
Use Large Language Models (LLMs) to generate outage summaries and ETR, to curb customer uncertainty

### Notification Review System (NRS)

Utilize a UI-based Review System to customize notifications for end customers while safeguarding sensitive data

### Automated Outage Monitor

Periodically extract outage details like ticket & dispatch status, enabling timely insights and proactive responses




### Outage Streaming Engine

Create a centralized outage data storage of all approved outage summaries, ensuring seamless access

Boost customer engagement with 3x more repeat visits to the service status map.

**85%** of poll participants find the framework helpful, with an overall satisfaction rating of **60%.**



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# Automated Outage Monitor: Swiftly detect outages, retrieve tickets & deliver critical details to the right teams

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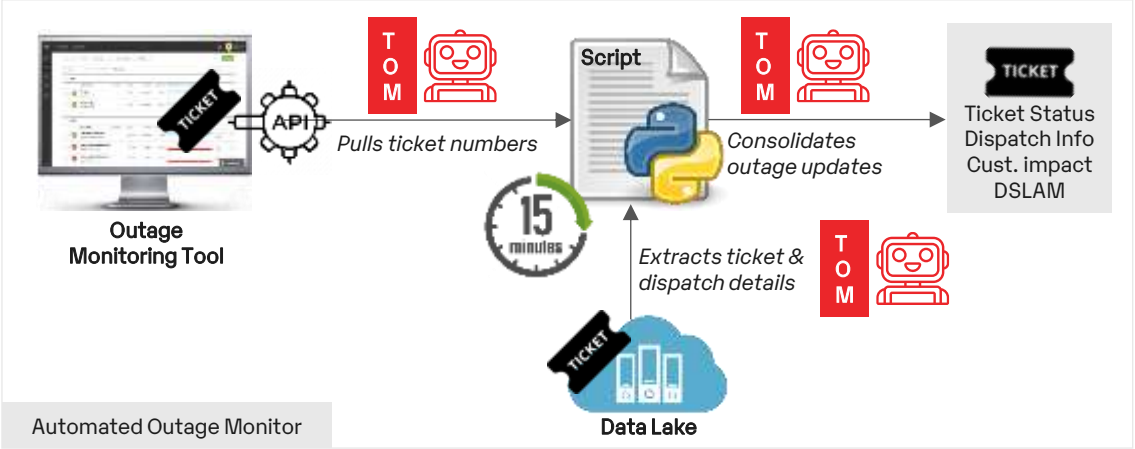
Implement an **AI Outage Monitoring System** for periodically extracting outage details, enabling **timely insights** and **proactive responses**

Build an **AI Outage Manager – Total Outage Manager (TOM)** to autonomously detect anomalies and flag unusual outage patterns, continuously learning to improve accuracy and reduce human intervention.

Use TOM to:

- Pull active outage tickets periodically from your in-house outage monitoring tool to get a real-time view
- Query the data lake and **extract detailed outage information** related to the tickets, like field dispatch details, Digital Subscriber Line Access Multiplexer (DSLAM), and customer impact, to ensure accurate outage analysis, enabling quicker resolution and better service
- **Consolidate outage data,** identify impact areas, aggregate ticket details, dispatch info, and customer impact for a complete view of each outage




Automated Outage Monitor

## Recommendation

- Optimize the **API integration** by using asynchronous HTTP requests (e.g., aiohttp or httpx in Python) to fetch data concurrently, reducing wait time. Implement connection pooling and retry logic to improve performance and reliability, ensuring the system remains responsive during high traffic.



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# SmartNoti: Leverage Gen AI to generate accurate, useful, & personalized updates for customers during outages

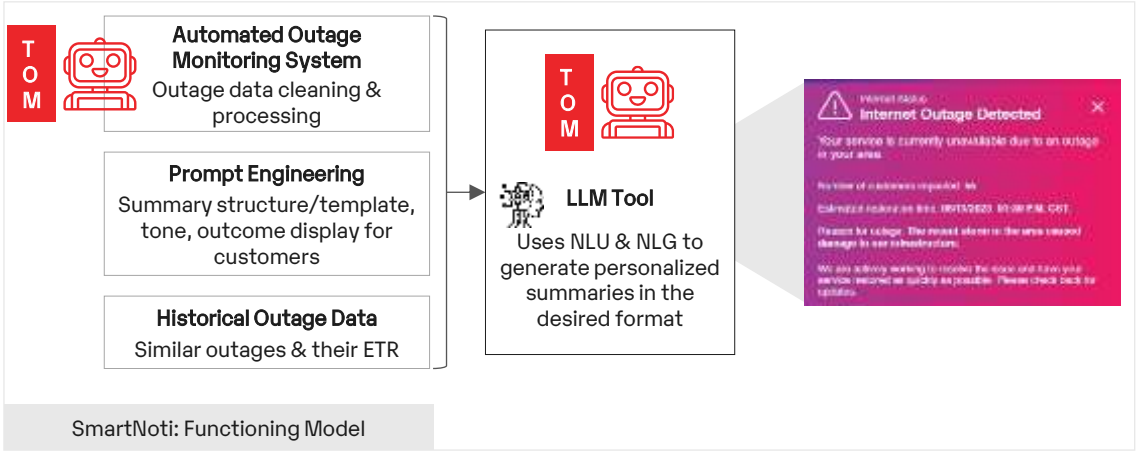


Use the GenAI-based SmartNoti system to turn complex outage data into clear, real-time, personalized summaries and ETRs

TOM

Assist LLM in generating real-time, personalized notifications, adapting to customer segments (B2B, B2C) and communication channels using **contextual intelligence.**

- Use **TOM to clean & process raw outage data** and remove sensitive information, ensuring only essential details
- Input the **cleaned data into the LLM,** which TOM will leverage to generate accurate outage summaries
- Create **custom prompts** to guide LLMs in producing content, avoiding sensitive details like equipment names
- **Utilize Historical Data** to categorize outages based on external & internal factors (weather, h/w failures) and predict accurate ETR using exploratory data analytics methods




SmartNoti: Functioning Model

## Recommendation

- Regenerate summaries only when changes are detected in ticket or dispatch data to reduce LLM tool usage, saving up to **25-30%** in costs
- **Revisit the historical ETR data** (bi-yearly) to see if the trend has changed & make necessary modifications
- Monitor outage details regularly for real-time updates. Set a **configurable frequency** based on business needs

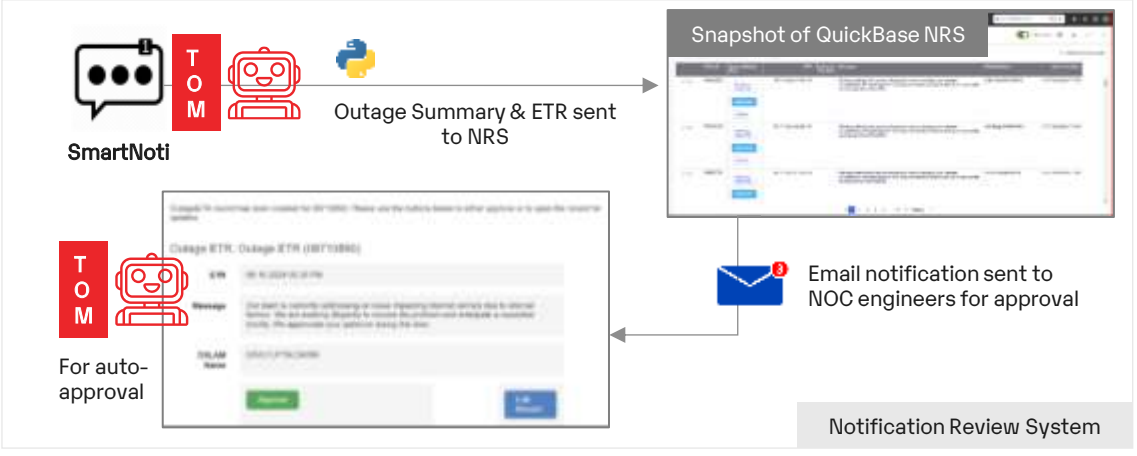
# Notification Review System (NRS): Ensure right, censored notifications reach your customers for effortless comprehension



Utilize a **triage system** providing automated approval for routine outages & manual review for exceptions. **balancing speed & accuracy**

Empower NRS by **constant learning, reducing human intervention,** and **auto-managing escalations** for deviations.

- Establish a **UI-based notification review system** for an easy and comprehensive view of all notifications
- Use **TOM** to push the outage summary and ETR data from LLM to the notification review system
- Set up an **Email Alert** for the Network Operation Center **(NOC engineers)** as soon as new outage data is pushed for approval/modification
- Implement an **auto-approval process utilizing TOM** for cases with insufficient outage data, where the LLM generates a generic template that doesn't require NOC engineer approval, saving time and effort




## Recommendation

- Choose a UI-based review application like **QuickBase**, a no-code platform, quick to integrate, and offering an easy view for editing/approval, saving weeks of creation time
- Create **one main ticket per outage** to share a common notification with all affected customers, streamlining NOC engineer reviews
- Utilize NRS to monitor responses (first **six months**); once satisfied, discard it to save costs
- Incorporate a **feedback mechanism** to update the LLM with approved summaries, maintaining data integrity and consistency

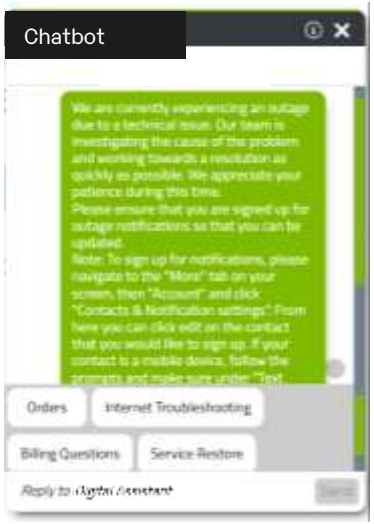
# Outage Streaming Engine: Display unified outage updates across all customer-facing portals for real-time visibility and consistency

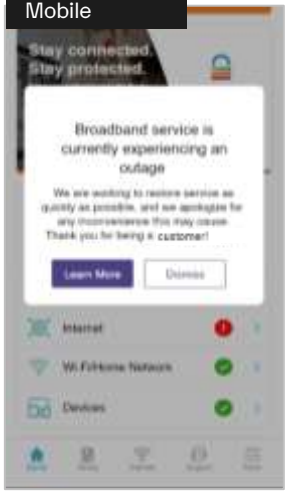


Sharing outage insights across multiple teams is **complex, time-consuming, and costly**, requiring multiple system integrations.

Create a **centralized outage data stream** of all **approved outage summaries,** ensuring seamless access

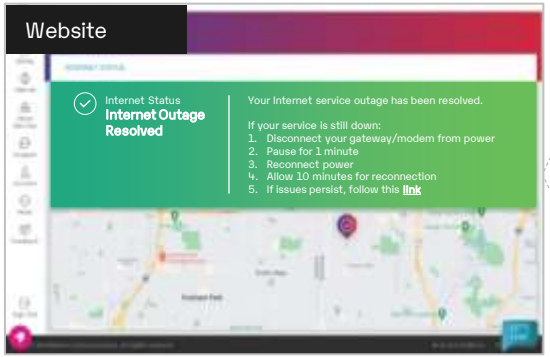
- Leverage a **big data framework** (Apache Flink, Spark Streaming) for **real-time streaming**, scalability, & seamless system integration, creating a single source of truth for all outage data, tagged with a **unique Outage ID**
- Implement a **producer/consumer model** to simplify access, enabling cross-functional teams (consumer) to consume data from a unified stream (producer) **using the Outage ID**, avoiding custom scripts & integrations
- Enable **Multi-Platform Publication**, ensuring **cross-team** (Customer care, self-service, etc.) access to consistent outage updates
- **Publish customer coordinates** under a unique ID to display affected area maps to customers accurately




T O M

TOM autonomously publishes approved insights to the Outage Streaming Engine and **dynamically displays** them based on the target platform. It can also handle notifications for low-severity and probable outages as a separate use case.




*Snapshots of various customer channels*

Any team with the Outage ID can access all related information. The **Customer Service teams** consume the data, ensuring a unified message is displayed across all customer channels (**mobile, web, chat**). Contact center teams can leverage information from CRM tools to convey accurate & consistent updates to customers over the call.



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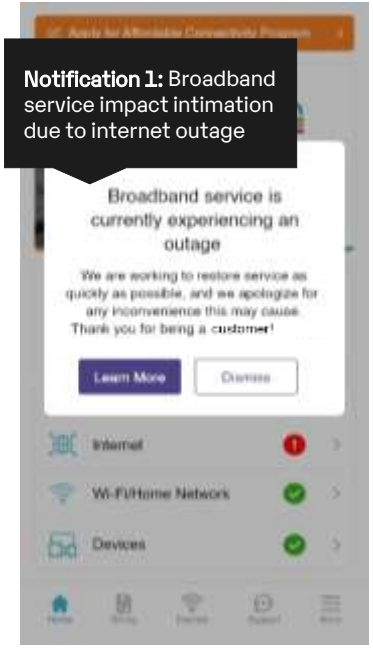
# TOMF Use Case: Delivering Near Real-time Summaries and ETR for Broadband Disruptions

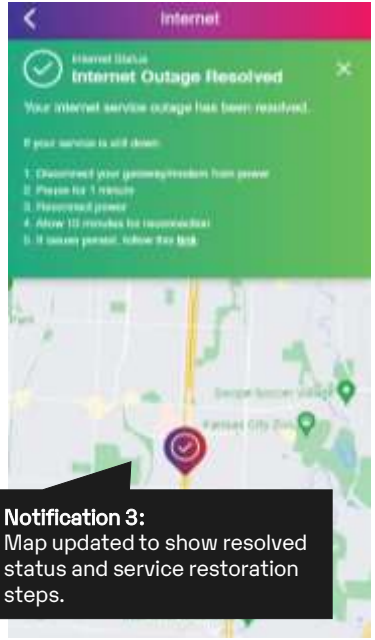
When TOM detects an internet outage during regular monitoring, it extracts ticket and dispatch details to determine the **cause, scope**, and **affected services**. It then uses LLMs to create **personalized, real-time notifications** and **ETRs** for all impacted customers across various channels and formats. These notifications, tagged to the specific outage, are reviewed and streamed across teams to ensure consistent communication across all channels.

Mobile view: Notifications for internet outage

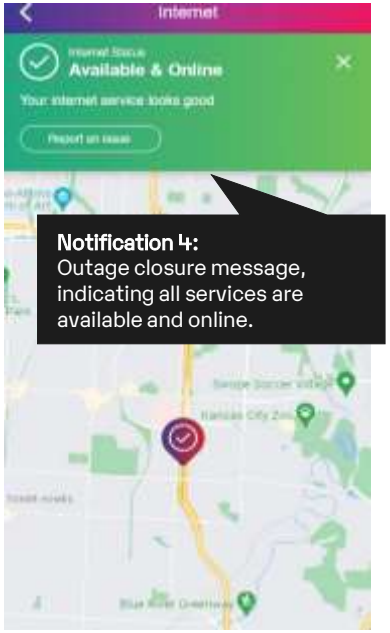



**Notification 1:** Broadband service impact intimation due to internet outage


**Notification 2:** Communication for the outage cause, impact area, and ETR shared proactively




**Notification 3:** Map updated to show resolved status and service restoration steps.




**Notification 4:** Outage closure message, indicating all services are available and online.



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# Benefits realized by a US communications service provider from implementing the Total Outage Management Framework (TOMF)

- 85% of poll participants rated the tool as helpful, with an overall satisfaction rating of 60%
- Provides consistent, concise outage updates along with ETR
- Spurs repeat views: ~3x more visits to the service status map

# Thank you

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