

## M24.0.708 - AI-driven EBITDA mastery: Revolutionizing Customer Journeys

Remodeling Service & Revenue Journeys with Generative AI & Intent Analysis

### INTRODUCTION

The Communications industry struggles with shrinking margins from competitive pricing, high operational costs and service commoditization. Additionally, declining customer loyalty and rising acquisition costs require investments to enhance value, streamline operations, and retain customers. AI technology offers CSPs significant opportunities to address these challenges by enhancing operational efficiency and transforming the costliest aspects of customer and service journeys into avenues of profitability and competitive differentiation.

In the next 2 years, 48% of CSPs will deploy AI, driving a sixfold increase in spending<sup>1</sup>. Maximizing the impact and efficiency of these AI investments is crucial for the industry's sustainability and long-term growth. However, fragmented and siloed data significantly limit CSPs' ability to leverage AI effectively. This Catalyst - championed by Vodafone, Telecom Argentina, and ConvergeICT - aims to create an AI-powered framework for accessing diverse data sources using a federated data model and multiple AI models to improve response value. By centralizing some data and accessing the rest via OpenAPI calls, CSPs can fuel AI initiatives across domains and the customer lifecycle without extensive and costly data migration.

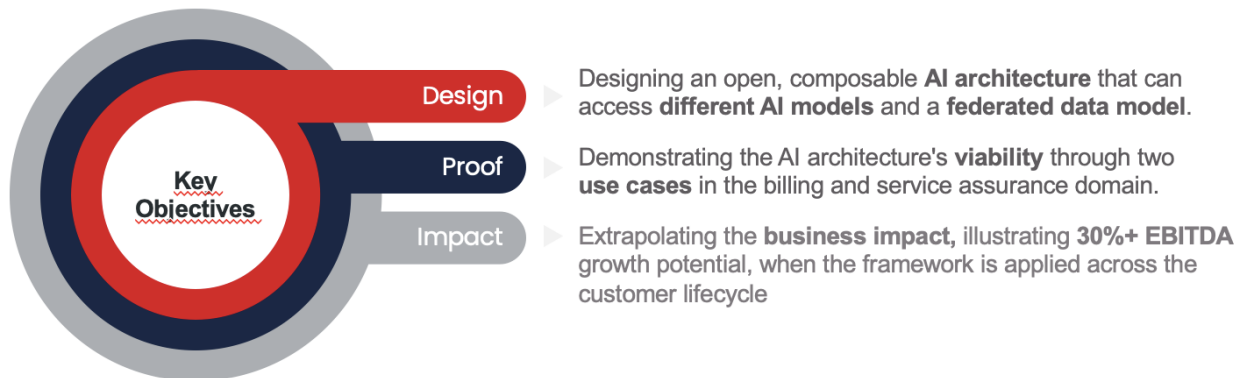
### A Pathway to AI-Driven EBITDA Mastery

**An open and composable AI-architecture for CSPs to significantly cut OPEX, boost revenue, and drive 30%+ EBITDA growth.**

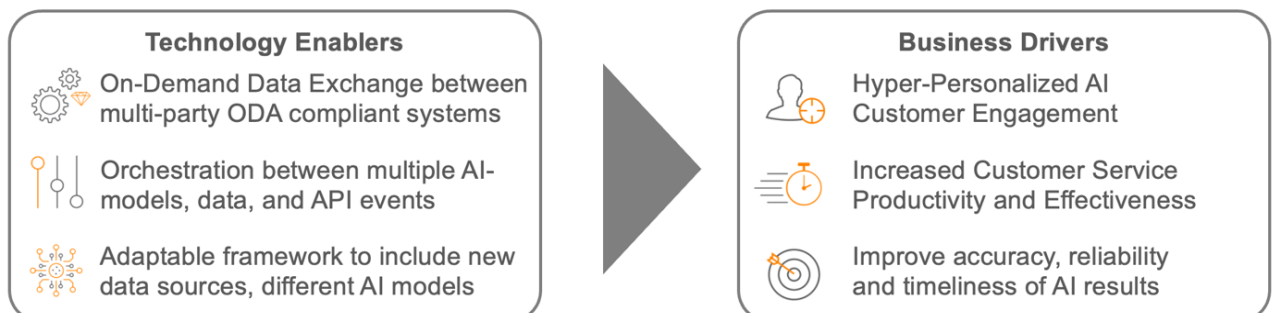
This data sheet covers:

- Catalyst Introduction
- Solution Design
- Functional Architecture
- Business Value (KPIs)
- Future Potential Impact

The key objectives of this Catalyst project are:



For CSPs looking to streamline operations, enhance customer engagement, and optimize monetization the designed AI-architecture provides the following benefits:



<sup>1</sup> Telecommunications GenAI Study, Altman Solon and AWS, Sep 2023

## USE CASES

While the framework can enhance efficiency and profitability in many areas, this Catalyst focuses on two specific use cases that bring to life the flexibility and productivity gains of the AI architecture.

### Use Case 1: Billing Inquiry, Customer Retention with Upsell - Assisted Channel

Billing-related inquiries make up 50% of customer care calls, overshadowing even critical issues like outages and reliability. These inquiries significantly impact customer satisfaction and drive high operational expenditures (OPEX) for call centers, typically ranging from 10% to 16% of OPEX costs for CSPs. The application of this AI-powered framework for this use case aims to:

- Improve first-call resolution efforts
- Reduce average call handling time
- Avoid customer calls through proactive measures
- Improve sales and upsell conversion rates (with the sales agent co-pilot)
- Improve Customer Experience to reduce churn rate and improve retention
- Improve Employee Experience to reduce turnover rate
- Reduce credits and discounts due to disputed charges

The core capabilities delivered by the Catalyst team:

- **Proactive Customer Engagement:** Uses sentiment analysis, case history, invoice history, and bill shock insights with GenAI to proactively engage with customers, provide personalized digital billing advice & revenue-generating suggestions, reducing agent involvement.
- **Reactive Support Mode:** Assist agents with a GenAI application to rapidly address billing inquiries, deliver accurate and prompt responses by leveraging customer sentiment, assets, product catalog eligibility, invoice history, and bill insights to and automate communication summarization and digital follow-up steps.
- **Smart Upselling:** Propose commercial offers through GenAI that address customers needs, connecting bill insights with commercial solutions.

### Use Case 2: Field Technician Troubleshoot and Resolve

Field service truck-rolls represent another high OPEX, often accounting for 17% to 30% of CSP OPEX costs. Improving fieldwork resolution times through using historic diagnosis and real-time information with Gen AI can significantly boost efficiency, productivity and first-touch resolution. For this use case the framework aims to:

- Accelerate work order completion by guiding the field engineer through the solution
- Enabling issue resolution without helpdesk intervention
- Ensure adherence to service level agreements to mitigate fines
- Effectively communicate the expected and final remediation plan to the customer

The core capabilities delivered by the Catalyst team:

- **Work Resolution Guide:** Creates an AI-generated guide for field engineers to work through the solution based on historical information about previous orders, trouble tickets and technical diagnoses.
- **Automated Troubleshooting:** Enables field technicians to diagnose the issue using the GenAI application that is processing real time information including historical data, network inventory, and CRM information reducing helpdesk intervention and MTTR.

## SOLUTION DESIGN

To support our business value objectives, the following capabilities were designed into our GenAI architecture to deliver on our use-case values:



### **Proactive and Hyper-Personalized AI-powered Customer Engagement**

Leverage highly personalized messaging curated by Generative AI using data analysis of billing and account data to proactively engage customers across any channel to minimize assisted or reactive actions.



### **GenAI Agent CoPilot to Increase Customer Service (CSR) Productivity**

Maximize agent productivity in assisted channels by automating the analysis of customer billing and account data, reducing human-based OPEX and increasing FCR.



### **On-Demand Data Exchange between ODA compliant systems**

Access data on-demand for time-sensitive AI responses. Utilize 'function calling' via TMF678 to access time-sensitive billing invoice insights, demonstrating how AI architectures can dynamically locate and access information.



### **Sentiment-based Next-best Actions to Maximize Customer Satisfaction**

Identify corrective next-best actions based on AI-driven sentiment analysis to optimize first-touch resolution and upsell opportunities.



### **Designed for Open Digital Architectures**

Dynamically access and manage a federated data environment to utilize data distributed across various applications, serving a set of service inquiries that require different datasets, strengthening industry direction towards Open API standardization.



### **Multiple AI-models**

Incorporates both a Large Language Model (LLM) from Anthropic and Predictive AI capabilities for sentiment analysis from AWS Sagemaker. This combination provides accurate and relevant proactive and reactive engagements whilst showcasing an open AI architecture for "Bring-Your-Own-Model" (BYOM) flexibility.



### **AI Trust Layer to Improve safety and accuracy of AI results**

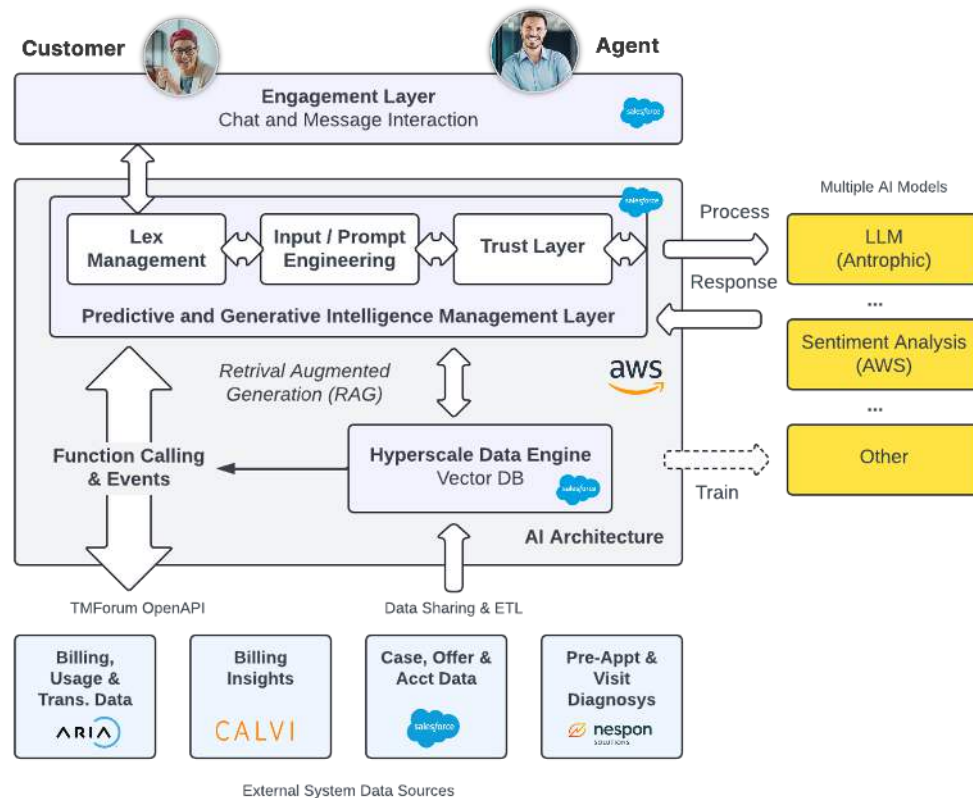
Use right AI models and guardrails of trust layer to protect the privacy and security of data and minimize hallucinations to promote the responsible and secure use of AI.

## FUNCTIONAL ARCHITECTURE

To deliver on our solution design our AI Architecture is composed using three critical areas to support both technical and business objectives:

- **Engagement Layer:** Manages engagement with GenAI users, both offline and online, and our core AI architecture using predefined natural language prompts and highly personalized messaging.

- **Predictive and Generative Intelligence Management Layer:** Is the core of our solution that processes user exchange, AI-model interactions, ecosystem events and a federated data store with function calling for our two specific use cases. This is an extensible layer that can support new use cases.
- **Hyperscale Data Engine:** Consolidates historical customer and service information to support Retrieval Augmented Generation (RAG) processes for GenAI prompt enrichment.

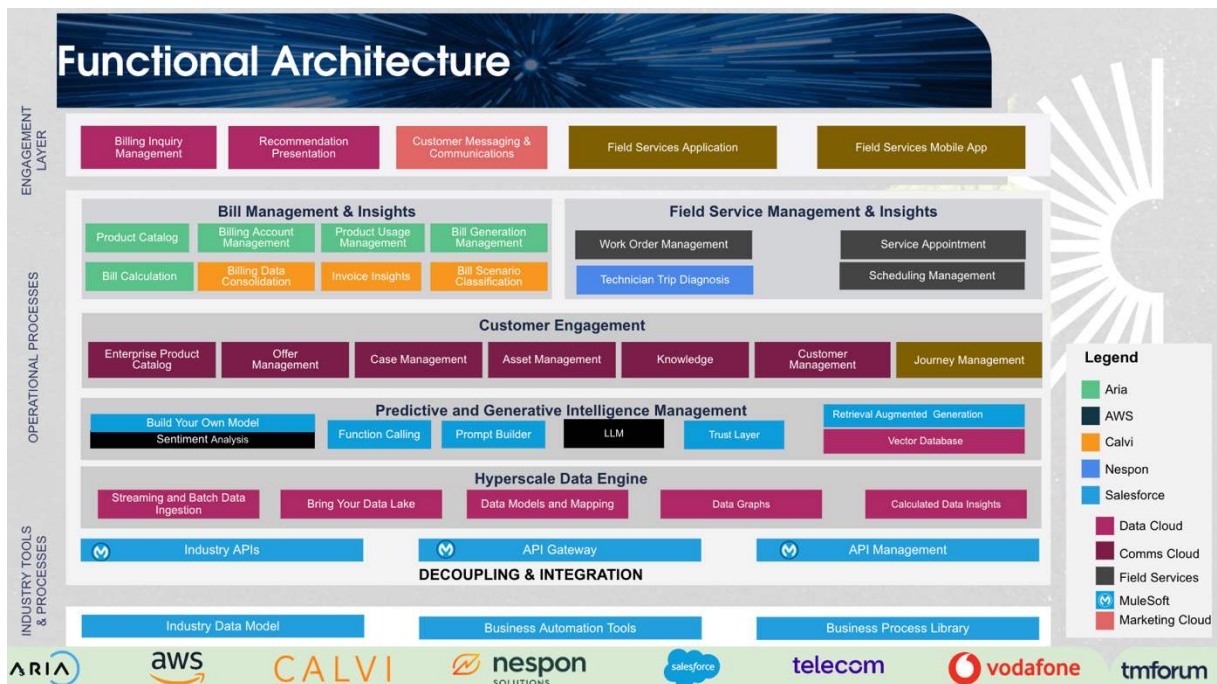


The AI-architecture was crafted using the following technologies:

- [Aria Systems](#): Provided customer billing and invoice data via Snowflake, along with commercial catalog information for ingestion into the AI framework.
- [AWS](#): Supplied the AI management tools and foundational model, including access to Anthropic's LLM and AWS Sagemaker for Sentiment Analysis.
- [Calvi](#): Processed data from Aria Billing Cloud, detecting and offering invoice insights (e.g., high bill due to X) via TMF678 integration for function calling by the AI framework.
- [Nespon](#): Contributed field service diagnosis management data and integrated AI flows to obtain client summary, work resolution guide and enhance field service productivity.
- [Salesforce](#): Delivered the engagement and orchestration layer (Omnistudio), which included a prompt builder, trust layer, Flow/APEX (process automation), and RAG processing. Salesforce also provided data from customer management, field service management, case

management, and knowledge base, centralizing specific historical customer information for RAG and integrating facilities using Mulesoft.

Together the vendors delivered the following business and technical functions to support the two key use cases behind our business case proposition:



The following standards were used in the design and implementation of this AI-architecture:

### TM Forum Open APIs

- TMF 678: Customer Bill Management API: The RAG (Retrieval Augmented Generative AI) solution calls TMF 678 from Calvi as the primary source of feeding invoice data into the AI solution.

### ODA Framework

- GB998 ODA Concepts & Principles was used to align functional architecture of the catalyst solution.
- IG1171 ODA Component Definition v5.0.0 was used to align functional architecture of the catalyst solution
- IG1328B Concept to Design Framework

### TM Forum Capability Map

- GB 1029: Used TM Forum Capability Map GB 1029C for developing Value Streams

## BUSINESS VALUE (KPIs)

The ambition of this Moonshot Catalyst is to develop a solution that can deliver CSPs a staggering 30+% increase in EBITDA. With OPEX/Revenue ratios ranging from 65% to 82%, OPEX remains the key driver of P&L, while CAPEX is less than 20% of OPEX. A secondary focus will be on revenue growth.

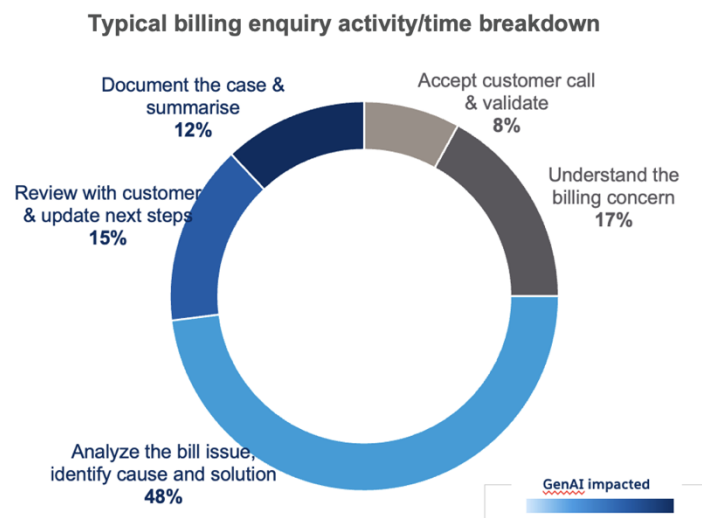
Our work focuses on how AI technology is changing or could impact CSPs from an operational perspective, specifically:

- How the technology is changing and streamlining processes and customer interactions.
- How players can monetize it.

We concentrated on the functions that will have the greatest impact on margins. The majority of OPEX spending is concentrated in network and customer-facing departments, accounting for **86%** of OPEX. Therefore, we have selected two use cases that enabled us to demonstrate how the AI architecture can improve the operational effectiveness of customer service functions in these domains.

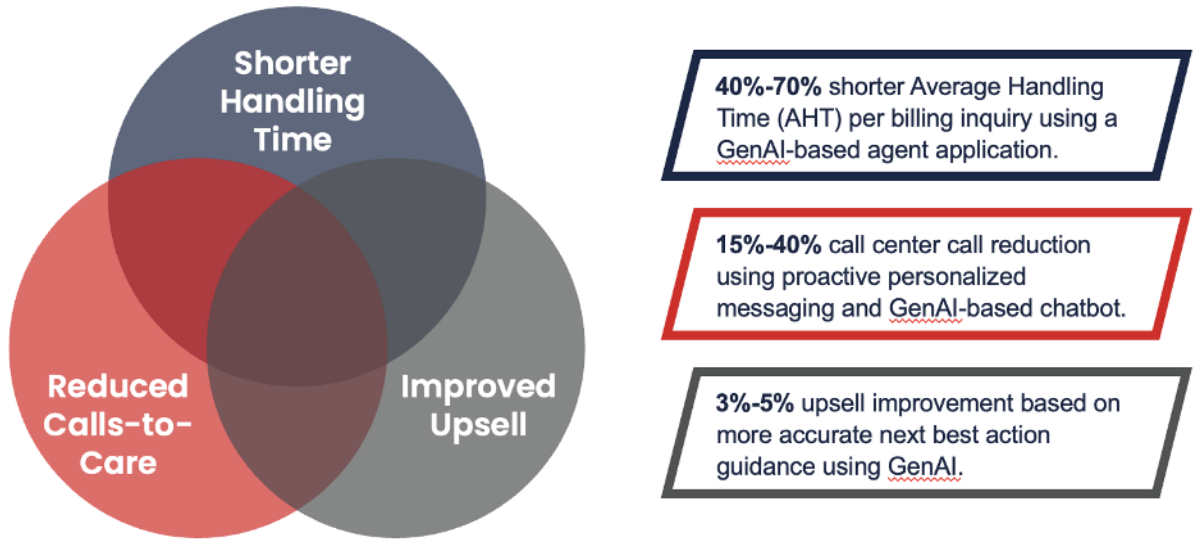
### Use Case 1: Billing Inquiry, Customer Retention with Upsell - Assisted Channel

- 50% of the customer care inquiries are billing related
- 75% of the duration of a typical billing inquiry can be impacted by GenAI



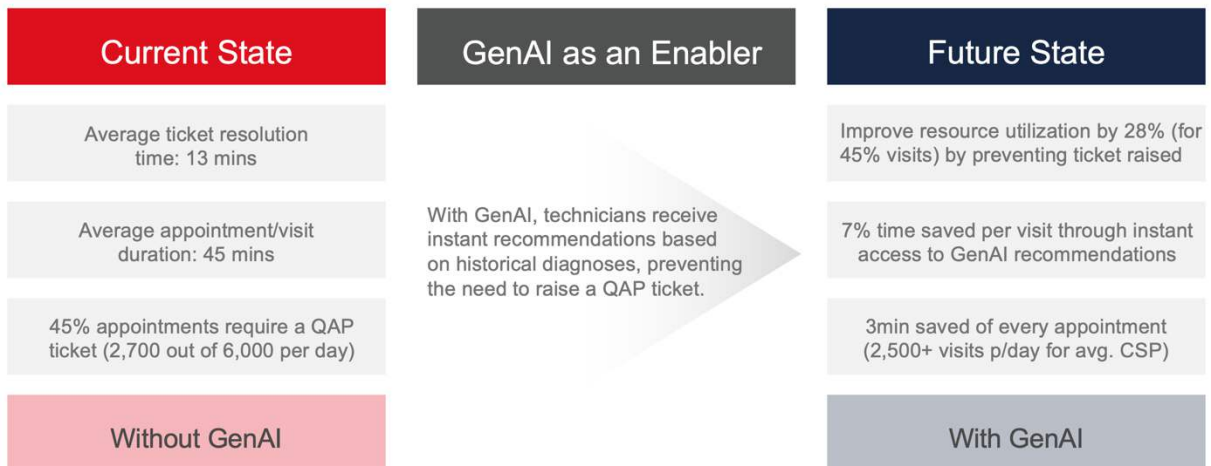
- Research and GenAI implementations in customer service centers, confirmed by our CSP Champions, highlight a productivity improvement of **40%-70%** driven by GenAI.
- Meaning the customer service OPEX can be decreased by **15%-26%** by focusing GenAI on billing inquiries.
- As Customer Service OPEX is 10% of the total OPEX, total OPEX can reduce 1.5% - 2.6%.
- Assuming OPEX/Revenue = 70% on average for a telco, the OPEX decrease of 1.5% - 2.6% results in an EBITDA increase - or OPEX/Revenue decrease - of 3.3% - 9.3%.

The implementation of the AI-architecture for this specific use case, delivered a **3%-9% EBITDA increase** from a 15%-26% reduction in Customer Service OPEX resulting in an 1.5%-2.6% reduction in overall OPEX through:



### Use case 2 - Field Technician Troubleshoot and Resolve

When technicians have an issue during installation or service, they raise a ticket (QAP). By creating an AI-generated guide for field engineers to work through solutions (based on historical data) we have significantly improved productivity and first-touch resolution. Overall, the Catalyst solution demonstrated an overall 7% time saving per visit.



## **Overall Business Impact: 31%-57% EBITDA Improvement**

As a key moonshot project deliverable, the Catalyst team, in collaboration with the CSP Champions, conducted an industry-level business case analysis. By demonstrating substantial reductions in operating expenses for use cases in customer service and network operations, our solution showcases impressive efficiency gains.

By leveraging federated datasets and dynamic function calling, our AI architecture can intelligently utilize the appropriate TMForum OpenAPIs in an ODA environment, delivering an extensive and adaptable solution. Consequently, this architecture is capable of delivering significant efficiencies in various use cases, including Sales, Marketing, Customer Support, and additional Network Operations.

**This leads to projected OPEX savings of 10.7% to 20.7% and drives EBITDA growth of 31% to 57% based on industry financial figures.**

In summary, the Catalyst solution offers a scalable, adaptable framework well-suited for future growth across diverse use cases and domains, maximizing EBITDA impact.

For more information see [AI-driven EBITDA mastery: Revolutionizing customer journeys.](#)

## **CATALYST ADVANCEMENT**

We identified options to advance our design and automation with the following innovation:

- **AI learns TMForum OpenAPI to automate on-demand knowledge extraction**  
Training AI on TM Forum OpenAPIs, so AI architecture can automate the calling of the right API functions to retrieve data in a federated ODA aligned business support system so use-case applications can scale.
- **Train AI to call the right AI**  
Enable the move from pre-define prompts to unbounded prompts (free entry) and still get accurate responses by training an AI solution to call the right AI models in context to the prompt inquiry.

We are excited to progress our work in the above areas.