

# Connected Cluster Development for India's leading Electric Scooter Brand

Take a deep dive into how Acsia leveraged its expertise in Kanzi and Android-based HMI projects to deliver cutting-edge connected cluster experiences for the three upcoming models of a leading electric scooter brand in India. Acsia's solution integrated system HMI, supported custom hardware specifications, and met the aggressive deadlines set by the client, setting a new standard in the Indian electric scooter market.

# Technology & Business Landscape

In 2021, the electric scooter market in India experienced several notable trends.

## Digital Instrument Clusters

Electric scooters increasingly featured digital instrument clusters providing essential information such as speed, battery levels, and navigation details. These clusters often included advanced features like turn-by-turn navigation and Bluetooth connectivity, enhancing the overall riding experience.

## HMI Development

Human-Machine Interfaces (HMIs) became more intuitive and interactive, integrating smartphone connectivity and real-time vehicle diagnostics. This development made it easier for riders to access and control various functionalities of their scooters, contributing to safer and more convenient rides.

## Navigation System Integration

Navigation systems in electric scooters offered real-time route guidance and traffic updates directly on the scooter's display. This integration was particularly useful in urban settings, helping riders navigate efficiently through changing traffic conditions.

## Connected Features

There was a growing emphasis on connected features, such as IoT integration, allowing scooters to communicate with smartphones and other devices. This trend facilitated features like remote diagnostics, over-the-air updates, and enhanced security measures.



# Customer Problem Statement

The customer, an Indian OEM, wanted a feature-rich and cutting-edge connected cluster experience for their three upcoming scooter models planned for imminent launch. They needed a reliable partner, with specialised expertise and resources, who could meet the aggressive deadline and create a high-quality product. The customer also wanted a Kanzi-enabled HMI and an Android-based navigation

system inbuilt in the scooter, which had to be created in the C++ tool of Kanzi before deploying it in the Android environment. This was the first-ever electric scooter in India with such robust HMI features, so there was no best practices template for any vendor or their in-house team to follow. The project complexity and tight deadline made it a challenging task.



# Acsia Solution

Acsia was chosen for its deep domain expertise in Kanzi and Android-based HMI projects. Acsia designed and developed the HMI of the scooter based on the screen designs provided by the OEM. They integrated the navigation system, made on Android 1.0 OS, with the Kanzi (3.6.15 version) based system HMI. Key features implemented by Acsia included:

## Navigation Integration

Integration of the navigation application into the vehicle cluster HMI proved challenging due to display mirroring and the need for seamless user interaction injection into the Android application.

## Audio Ducking

Implemented audio ducking support to manage Bluetooth audio, ensuring vehicle notification chimes (indicator, reverse, etc.) are audible despite Bluetooth streaming.

## Keyboard Integration to Kanzi

Integrated the Android keyboard into the Kanzi UI, ensuring consistency between the Kanzi-based cluster and various Android applications. This included support for dark and light modes in the default AOSP keyboard.

## Custom Kanzi Plugin Integration

Developed and integrated custom Kanzi plugins to support system requirements not met by the default Kanzi engine.

## Custom Click Listener

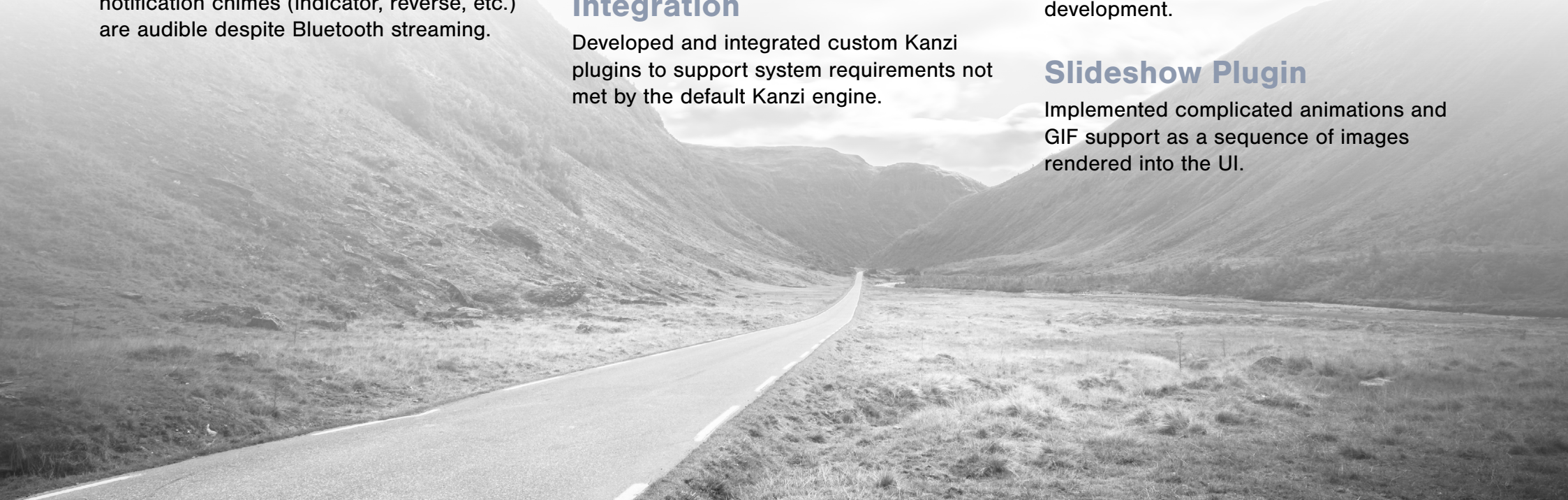
Redirected all UI interactions in Kanzi directly to the Android layer event listener, facilitating clean architecture and generic event handling.

## XML Data Source

Allowed Kanzi UI developers to test data source integration without actual backend data feeding, supporting parallel development.

## Slideshow Plugin

Implemented complicated animations and GIF support as a sequence of images rendered into the UI.





# Business Outcome & Impact

- The customer met their deadline and rolled out their vehicle to the Indian market.
- The feature-rich cluster was the first of its kind in the Indian market for a scooter, providing an excellent user experience for drivers.
- The integrated navigation system delivered significant improvement in route calculation times compared to other models, enhancing user experience in urban environments.
- The integration of Kanzi and Android systems resulted in significant reduction in overall system response time, making the interface more responsive.
- The project established the brand as a leader in innovation in the electric scooter market in India, being the first to introduce such advanced connected cluster features.

## Key Learning

- Deep expertise in Kanzi and Android-based cluster projects, with the skillset to handle end-to-end development and provide various customizations as needed.



# Expert Speak



**Gloria Joseph**  
Delivery Leader

Integrating the advanced features of both Kanzi and Android HMI systems required a thorough understanding of the technologies and meticulous planning. Our team's collaborative efforts ensured a successful implementation, providing an exceptional user experience."



**Vasantharaj G**  
VP Technology

"Acsia's deep expertise in Kanzi and Android-based HMI projects was crucial in meeting our aggressive deadlines and delivering a high-quality product. Their ability to integrate complex systems seamlessly was impressive."

## About Acsia Technologies

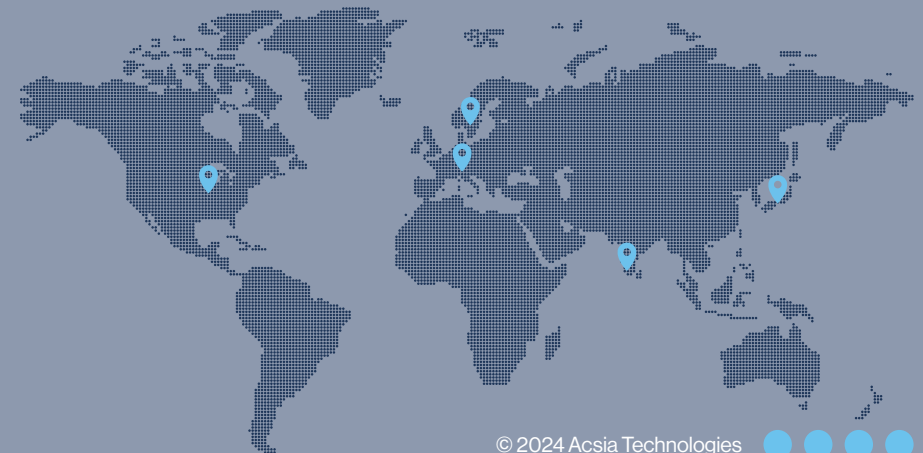
Acsia is a global leader in automotive software powering Digital Cockpits & Displays, e-Mobility, and Telematics. We use our expertise to develop solutions that simplify complex problems and create safer, sustainable, and more compelling driver and passenger experiences. With a presence across the United States, Germany, Sweden, Japan, and India, we collaborate with top carmakers and Tier-I suppliers.



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