

# MECEL BETULA SDK

## Automotive Bluetooth® Platform Software Development Kit



**The Mecel Betula SDK is a complete automotive Bluetooth Platform that significantly simplifies implementation of Bluetooth connectivity in automotive systems.**

**Mecel Betula SDK does not only contain necessary Bluetooth protocols and profiles, but also the complete application framework for the most common Bluetooth use cases. ■■■**

### APPLICATION FRAMEWORK

Mecel's long experience and knowledge of developing Bluetooth products has been built into the Mecel Betula SDK and the only thing end-product developers need to add is the actual user interface – the HMI.

Bluetooth behaviour and functionality will remain the same regardless if the end-product is a radio, hands free system or a navigation unit. Using the Mecel Betula SDK will not only improve the end-product's overall Bluetooth performance and quality, but also minimize the development effort needed to add Bluetooth connectivity in the vehicle.

### POWERFUL API

Mecel Betula SDK provides a high level easy-to-use platform API. The application programmer does not need to be a Bluetooth expert as all Bluetooth details are encapsulated in the platform abstracted from the user. The API also provides a mechanism – “enabled operations” – that tells

the HMI application what functions are enabled in the specific state – basically what screen buttons should be enabled for the end-user.

### MODULAR DESIGN

To ensure a verifiable and maintainable design, the implementation of the Mecel Betula SDK has been strictly modularised.

This structure allows dynamic updating of software modules, i.e. it is already prepared to support software updates. Mecel Betula SDK supports multi-process operating systems and allows partitioning in distributed systems.

### CONFIGURATION

Configuration of Mecel Betula SDK is done in run-time (post-built) using XML based configuration files that are validated against XML schemas that help the user to input correct configuration parameters.

### INTEROPERABILITY (IOP)

Mecel has an extensive global testing program, in which a majority of the current and upcoming mobile phones are tested against the Mecel Betula SDK.

The mobile phones are verified against a thoroughly developed test specification, which meets several standards such as Bluetooth SIG, CTIA (Cellular Telecommunications & Internet Association – US) and CCAP (Car Communication Application Promotion – Asia).

### ACOUSTIC ECHO CANCELLATION (AEC)

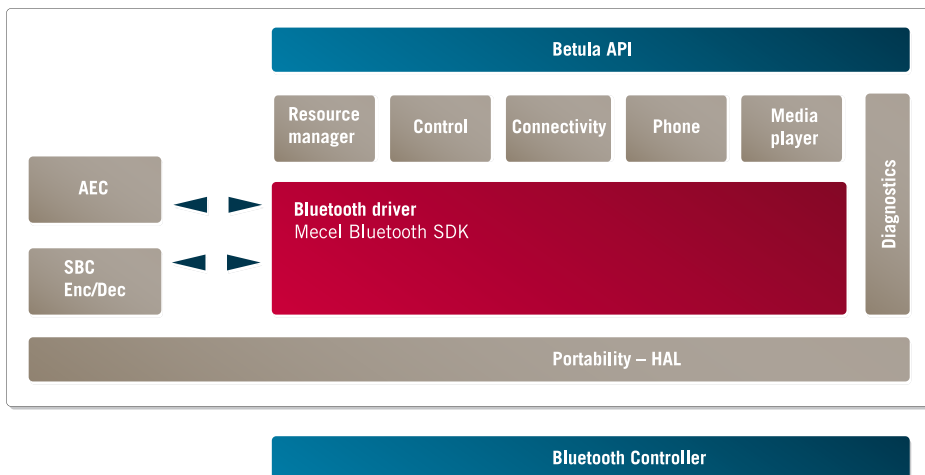
Mecel Betula SDK provides access to the pre-integrated Ruwisch's high-performance Acoustic Echo Cancellation (AEC) and Noise Suppression (NS) algorithms using sophisticated tools that significantly reduce the effort needed for tuning the audio system.

### DIAGNOSTICS

The built-in diagnostics module provides features that can be very useful during development, such as:

- Test mode settings
- Bluetooth chip specific commands
- Debug support





#### FEATURES

- Built-in application logic and data storage
- Powerful API
- Multi-profile support
- Interoperability program
- Pre-integrated AEC and NS-algorithms

#### TECHNICAL SPECIFICATION

##### Protocols and Profiles

Bluetooth 2.1+EDR  
 HFP – Hands Free Profile  
 PBAP – Phonebook Access Profile  
 A2DP – Advanced Audio Distribution Profile  
 AVRCP – Audio/Video Remote Control Profile  
 DUN – Dial-Up Networking Profile  
 OPP – Object Push Profile  
 SPP – Serial Port Profile  
 PAN – Personal Area Network Profile  
 MAP – Messaging Access Profile (when adopted)

##### Documentation and Tools

Reference Manual and User's Guide  
 Test applications (both Windows and embedded systems)  
 Head unit display simulator  
 Debug tools  
 AEC tuning tools

##### Additional Modules

AEC – Acoustic Echo-Cancellation (Ruwisch)  
 NS – Noise Suppression (Ruwisch)  
 SBC Decoder  
 SBC Encoder

##### Optional profiles for custom designs

Fax – Fax Profile  
 FTP – File Transfer Profile  
 SYNC – Synchronisation Profile  
 BIP – Basic Imaging Profile  
 HID – Human Interface Device Profile  
 SAP – SIM Access Profile  
 BPP – Basic Printing Profile

For more information, please go to [www.mecel.se](http://www.mecel.se) ■■■

## AT THE FOREFRONT OF AUTOMOTIVE TECHNOLOGY

Mecel is a systems and software development company with more than 25 years of experience in developing solutions for the automotive industry. We specialize in in-car communication technologies, user interface development and consumer device interaction. As engineering consultants, we are pioneering state-of-the-art technology to produce innovative and efficient solutions that provide our clients with a definite competitive edge. We are skilled in taking on the entire procedure from initial R&D work to development and testing of the final products. ■■■

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