

PRODUCT BRIEF – MECEL BETULA SUITE



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Automotive Bluetooth® Platform

Mecel Betula Suite significantly simplifies implementation of Bluetooth connectivity in automotive systems. The product is defined by a complete automotive Bluetooth platform including a global interoperability program.

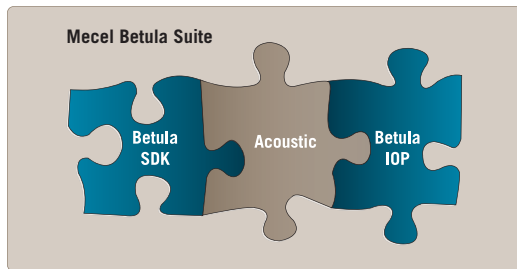
With ensured global compatibility of mobile phones and reduced development need, extensive and continuous customer value is achieved. ■■■



MECEL BETULA SUITE

Mecel joined the Bluetooth SIG as one of the very first members back in 1998. Mecel is now a world-leading developer of Bluetooth software and associated applications, and as an associate member of the Bluetooth SIG, we are working in the Car and Audio/Video Workgroups to help bring the standard forward.

Mecel now provides a complete Bluetooth solution, Mecel Betula Suite, primarily dedicated for the automotive industry. Mecel Betula Suite is comprised of two elements, where *Mecel Betula Software Development Kit (SDK)* is the key component which significantly eases the implementation burden and reduces the engineering cost.



Together with the *Mecel Betula Interoperability (IOP)* program, Mecel can ensure world-wide mobile phone compatibility.

MECEL BETULA SDK – AUTOMOTIVE BLUETOOTH® PLATFORM SOFTWARE DEVELOPMENT KIT

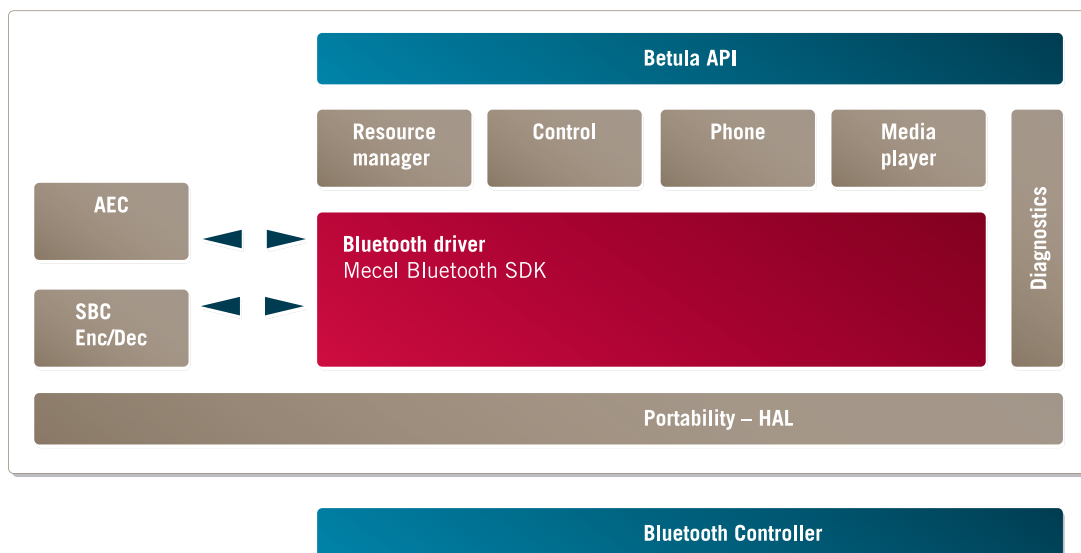
The Mecel Betula SDK provides the automotive industry with a comprehensive Bluetooth platform. It contains all necessary Bluetooth profiles and a majority of applications needed to deliver full Bluetooth functionality.

The powerful user interface (high level abstraction) will assist in creating quality software rapidly and cost-effectively. The result is less work for end-product developers.

In addition, Mecel Betula SDK supports Ruwisch & Kollegen GmbH high-performance acoustic echo cancellation (AEC) and noise suppression (NS) algorithms.

Features:

- Built-in application logic and data storage
- Powerful API
- Pre-integrated support of AEC and NS algorithms
- Interoperability program
- Mecel Betula Head Unit Concept, testable PC-version



Mecel Betula SDK – Graphical overview



MECEL BETULA HEAD UNIT CONCEPT

Mecel Betula SDK is also available as a testable PC-version. By installing a program containing the Mecel Betula SDK in an attractive HMI, a simulated head unit will appear and key features can be tested. By using the Mecel Betula Head Unit Concept, a unique opportunity to evaluate all relevant Bluetooth automotive features is given, before a potential end-product implementation. The characteristics of the PC-tool will equal the behaviour in an end-product containing the Mecel Betula SDK.



ACOUSTIC ECHO CANCELLATION

Together with German audio and voice processing experts, Ruwisch & Kollegen GmbH, Mecel has pre-integrated support for their signal processing modules such as acoustic echo cancellation (AEC) and noise suppression (NS) algorithms.

Mecel and Ruwisch & Kollegen GmbH can also provide a Bluetooth-based hands free tuning tool. The tool will lower the cost for Bluetooth hands free tuning significantly and speed up the process of getting best possible acoustic performance.

MECEL BETULA IOP

Bluetooth interoperability describes how a certain Bluetooth device, for example a hands free in-car radio, functions with mobile phones.

Even though Bluetooth devices are certified according to standards provided by the Bluetooth SIG organization, the interoperability between devices may still fail due to new combinations of devices.

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

Test Specification

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).

The test specification is also the result of 10 years of experience of implementing and testing Bluetooth features at Mecel.

Test Execution

Mecel utilizes a test house well established on all continents. Knowledge and experience of the respective local market guarantees intelligent selection of mobile phones to be tested.

In addition to the IOP testing, Mecel actively participates in UPF's (UnPlugFests – test sessions hosted by Bluetooth SIG) in order to evaluate new profile enhancements of the Mecel Betula SDK.

Database – Presentation of Test Results

The Mecel Betula IOP Program will generate a large database that defines the interoperability between all tested phones and Bluetooth devices using Mecel Betula SDK. The vehicle manufacturers will no longer have any uncertainties about the compatibility and with this knowledge, will give the end customer great value.

Since the testing is ongoing, the program continues to provide the end customer with updated information throughout the product's life cycle. This is a valuable opportunity for the OEM to keep its Bluetooth products up to date over several years.

The IOP database can be presented in numerous ways to suit the needs of the OEM.



Price Competiveness

Access to the IOP information and future subscriptions of test data are available at an extremely competitive cost. Due to thorough planning and test execution, expenses are kept to a minimum, resulting in an attractive offer to the end customer.



MECEL ENGINEERING SERVICES

Mecel can contribute to a complete and production ready Bluetooth product in numerous ways. Examples of activities where Mecel will provide expertise and value are:

Porting – Mecel has experience in porting to a variety of hardware and operating system options from the leading vendors in the market.

Integration – Mecel has skills and a renowned history of integrating Bluetooth solutions such as the Mecel Betula SDK in environments where it's needed. The experience of our own core technology results in efficient work with superior quality.

Application Development – If a complete Bluetooth product is needed, Mecel has knowledge from a great number of OEM projects where we, amongst several areas, designed and implemented the Bluetooth solution.

Support – Mecel support is available with short lead time and expertise. It covers areas from integration to application development and lasts over a defined period. Mecel can also offer support during the market presence of a product, where potential interoperability issues can be analyzed and taken into account if needed.

Profile Development – If a profile requested is not present in the Mecel Betula, Mecel can offer development resources to meet the customer's need. A new profile can be created and inserted into Mecel Betula SDK quickly.

Bluetooth Qualification – Mecel can handle all qualification work including testing and other steps prior to and including production readiness.

Complete Bluetooth Responsibility – The most convenient way to introduce a Bluetooth feature in a product is to hand over the complete responsibility to Mecel, starting from porting and ending with qualification.

For more information about Mecel's Bluetooth products and services, please contact Mecel at betula@mecel.se ■■■

About Mecel

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.

Our product portfolio provides automotive grade software and tools:

Mecel Picea Suite – for efficient AUTOSAR development
Mecel Betula Suite – for efficient Bluetooth connectivity development
Mecel Populus Suite – for efficient user interface development



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