

Smart Transport

Fleet Management



CHALLENGES	SOLUTIONS	RESULTS
<p>Fleet Management Made Easy</p>	<p>Modular Platform for Fleet Management</p>	<p>A Cost Efficient, Dynamic, and Safe and Secure Solution</p>
<p>What makes a fleet system different compared to other IoT systems are:</p> <ul style="list-style-type: none"> - The edge devices move around, are not always-on and are not always connected. - When the devices are connected, the connection speed and cost may vary (e.g., Wi-Fi vs. Edge/3G/4G/5G) <p>Often there are several edge devices within one vehicle, typically sharing a single WAN connection, and all with the need to find/use each other within the vehicle.</p> <p>Other typical fleet management characteristics/requirements are:</p> <ul style="list-style-type: none"> - Software updates/reconfigurations are common - Ability to verify source of all software - A software update should never fail. 	<p>The modular platform is based upon two key components provided by Makewave.</p> <p>Knopflerfish OSGi – Every vehicle has one or more on-board computers that runs an embedded Knopflerfish OSGi platform. The on-board computers are connected to the in-vehicle network (FMS) and to each other (LAN/IP).</p> <p>Ubicore – Manages the embedded edge device.</p> <ul style="list-style-type: none"> - Ubicore knows exactly which bundles are installed and started in which edge device. - Ubicore pre-resolves and defines what needs to be installed => software packages for deployment are created - These can be tested, verified and signed before deploying <p>Ubicore puts you in control of the software running in the vehicle gateways. You can control, what, when and where to upgrade.</p>	<p>Makewave’s solution with OSGi technology provides the foundation for a cost-efficient, dynamic and secure fleet management solution.</p> <p>Clear Separation – Clear separation between business logic (implemented as OSGi bundles) and lower lever parts device code (C/ C++).</p> <p>Remotely Managed and Flexible – It is very easy to add, remove or update functionality in the business logic layer over time.</p> <p>Uniform Architecture – Exactly the same business logic bundles can be used regardless of on-board computer architecture (ARM, X86). No need to recompile, or support different versions.</p> <p>Secure Software Updates – Ubicore is in control and guarantees the correct software is installed and is executing.</p>



From the enterprise to the edge Makewave's products puts you in control

