In most cities, if you don’t own a car, or just want to leave your car at home, you typically need to use more than one mode of transport to get around.

You might, for example, start with a city bus or a rental bike, then transfer to the subway system, a train, or maybe a ride-sharing service to finish your journey. This method of getting around, known as multi-modal transport, or mixed-mode commuting, makes use of public and private transit options, and can be an easier, more efficient way to navigate urban environments. Also, because multi-modal transport means fewer people drive single-occupancy vehicles, it has the added attraction of helping to reduce congestion, road traffic accidents, energy consumption, greenhouse-gas emissions, and dependence on fossil fuel.

Multi-modal transport is gaining momentum, and being promoted by a growing number of city and national governments. In Europe, for example, sustainable Intelligent Transport System (ITS) services are part of the European Commission’s action plan and directive for mobility and transport. A new legal framework, adopted in 2010, aims to accelerate the deployment of “innovative transport technologies” across Europe, with the goal of establishing “interoperable and seamless ITS services.” One result of this directive is that public-transit authorities now make some of their operating data, such as arrival and departure times, available for use in intermodal transport schemes.
Having a similar goal of expanding multi-modal transport, the UK Department for Transport published a report in 2013, titled “Door to Door: A strategy for improving sustainable transport integration.” The report, endorsed by a number of public and private organizations, including groups that represent bicyclists, rail passengers, train operators, and transport executives, underscores the importance of intermodal transport and recommends ways to expand its use.

It Needs to be Easy

The Door to Door Strategy Report makes an important point, noting that multi-modal transport really only works when it’s easy. If multi-modal transport is really going to compete with private cars, it has to be at least as convenient and straightforward as driving. That means it has to be truly simple to plan an entire journey, from start to finish, whether it’s on foot, by bike, or using some motorized form of public or shared transport.

The idea that multi-modal transport can be user friendly is central to AU-DACE\(^1\), a consortium supported by the French government, which is working to develop complete, sustainable mobility systems. AU-DACE brings together expertise from the areas of car sharing, carpooling, electric vehicles, public transport, telematics, insurance, and public research, and has developed an innovative mobile app, called “Zaleo,” which aims to be a gateway to personal mobility.

Making it a Reality

Zaleo shows you the direct route or the best combination of routes, based on data from public transport, various car sharing and carpooling services, bike routes, and pedestrian walkways. It then adds information about the suggested routes, detailing the savings, in terms of money, time, and carbon emissions, for each option. A complementary insurance system, adapted to the mobility of individuals, provides support for journeys that use rental services and other modes of transport that benefit from such coverage.

Because Zaleo lets you quickly and easily find the routes and transport modes that work best for you, it provides the ease of use, flexibility, and multimodality needed to make intermodal transport a viable alternative to driving a private, single-occupancy car.

Zaleo was introduced at the October 2015 ITS World Congress. The first deployments of Zaleo are planned for 2016, with one in the southwest port city of Bordeaux, an urban region that, with suburbs and satellite towns, includes more than 730,000 people, and another farther north in Niort, an urban area of more than 135,000 people.

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1. Companies involved in the AU-DACE consortium: MAIF, Koolicar, BlaBlaCar, Citiz, Moviken, Credor, Antenia, Sierra Wireless.
How Zaleo Works

The Zaleo app works with a central cloud platform that does several things. It gathers real-time location data from the various methods of transport (rental bike, car-sharing, bus, train), and aggregates the data for use by the app. The cloud platform also provides smart and integrated ticketing, for public transportation and private mobility services, so you can buy tickets and make reservations within the app. The cloud platform also makes real-time information available to all the relevant stakeholders, thereby increasing efficiency and ensuring safe, comfortable, and easy access to a full range of transport services.

How Sierra Wireless is Involved

For the cloud platform to have the necessary information for every mode of transport, each vehicle involved in the scheme needs to be equipped with telematics technology that provides, among other things, real-time location data.

Building on more than a decade of experience in public transit, providing market-leading products that meet the demanding requirements of transit applications, Sierra Wireless is part of the AU-DACE consortium and helped define the telematics requirements for each mode of transport used by Zaleo. For example, the system gathers and transmits data on wait times and available seats for public transport, reports on the whereabouts and occupancy of pooled and shared vehicles, and supplies other details. The setup draws on Sierra Wireless’s many years of experience with leading automotive manufacturers and car-rental companies and, as a result, uses the same secure, reliable techniques as vehicle-safety systems, which send coordinates and other details to first responders in case of an accident, as well as complex fleet-management systems.
Everything Needed

Along with helping to define the technical specifications for telematics, Sierra Wireless can also supply all the technologies needed to implement them. That includes all the modules, SIM cards, cloud, and connectivity services required by private transport services, and the mobile gateways used by public transport to control operations.

In fact, Sierra Wireless can provide everything necessary to enable a Zaleo-style app. A proven innovator in connected vehicles and other aspects of the Internet of Things (IoT), Sierra Wireless is the first to supply an end-to-end IoT platform pre-integrated with hardware and providing access to wireless networks globally.

The Only End-to-End Platform

Sierra Wireless is the first to combine cloud, hardware, and managed connectivity services to support worldwide deployment of transit solutions. The offering includes embedded solutions, vehicle-area network (VAN) multi-network routers and gateways and cloud-connectivity services.

EMBEDDED SOLUTIONS

Designed into the telematics solutions used by the various modes of transport involved in a door-to-door app, Sierra Wireless AirPrime WP Series embedded modules use an integrated device-to-cloud architecture that enables quick development of a Linux-based product, and seamlessly sends valuable user and product data to the cloud. Offering an application processor running the open-source Legato platform, a GNSS receiver, and a cellular modem with an ultra-low power domain, WP modules reduce system complexity and speed time-to-market.

VEHICLE AREA NETWORK - MOBILE NETWORKING SOLUTION

Sierra Wireless offers a vehicle networking solution that uses highly reliable, high-capacity connections to support depot Wi-Fi and broadband cellular for multiple onboard systems.

Sierra Wireless of products to simplify the deployment, management, and maintenance of advanced mobile networks on public transportation. The AirLink Networking platform includes a rugged cellular vehicle router such as the AirLink MG90 or MP70, the AirLink Mobility Manager, a mobile-network management system for advanced, real-time control of the entire fleet; and the AirLink Connection Manager (ACM) Mobile-Optimized VPN Server, a secure platform that provides advanced security for all connected devices.

The AirLink MG90 and the AirLink MP70 are high-performance, LTE-Advanced network routers specifically designed to provide secure, always-on connectivity in mobile applications. The AirLink MG90 is a multi-network router that supports up to two dedicated cellular raVehdios, and a dual Wi-Fi router that actively finds and uses the best connection based on user preferences and prioritization settings. The AirLink
MG90 enforces configurable quality-of-service policies to effectively share available wireless resources while meeting individual application requirements. The AirLink MP70 supports one cellular and one Wi-Fi connection (client/access point), and is a cost-effective way to deliver broadband connectivity in multi-application environments that don’t need the multi-network support and high-availability that the MG90 can provide.

As an example, with the dual cellular WAN radio connections on the MG90 combined with policy-based routing could be configured to support a dedicated, secure link for operations and support multi-modal systems such as Zaleo, while a second dedicated link could be used to let passengers access Wi-Fi while on board. Having Wi-Fi onboard makes public buses more attractive to passengers, and can increase ridership, since commute time can become work or entertainment time.

The AirLink Mobility Manager (AMM) is a comprehensive system that makes it easy to deploy, monitor, update and configure AirLink routers. It also simplifies the task of remotely administering the configuration of previously installed equipment, either individually or fleet-wide. The AirLink Connection Manager (ACM) VPN appliance that is optimized for maintaining always-on secure VPN connectivity while roaming across more than one wireless network.

SIERRA WIRELESS ADAPTIVE CONNECTIVITY
Through the Sierra Wireless connectivity series, telematics devices using Sierra embedded modules, or AirLink networking vehicle routers can be equipped with a Sierra Wireless SIM card that provides multi-operator coverage with global roaming. That can simplify the setup for a number of transport services, especially those that operate over a broad geographical area, by having just one connectivity agreement, one network integration, one management platform, and a single point of support, while having access to multiple networks throughout an operating region.

Conclusion
As municipal and regional governments begin to focus on ways of making transport more environmentally friendly, more efficient, safer, and more secure, there is increased demand for the apps and services that support intermodal transport.

Sierra Wireless understands the importance of making it easy to plan door-to-door journeys, and will continue to use its proven expertise in secure telematics to help cities expand intermodal transport.

To learn more about how Sierra Wireless is shaping the future of transit connectivity, visit sierrawireless.com/transportation.

About Sierra Wireless
Sierra Wireless (NASDAQ: SWIR) (TSX: SW) is an IoT pioneer, empowering businesses and industries to transform and thrive in the connected economy. Customers Start with Sierra because we offer a device to cloud solution, comprised of embedded and networking solutions seamlessly integrated with our secure cloud and connectivity services. OEMs and enterprises worldwide rely on our expertise in delivering fully integrated solutions to reduce complexity, turn data into intelligence and get their connected products and services to market faster. Sierra Wireless has more than 1,100 employees globally and operates R&D centers in North America, Europe and Asia.

For more information, visit www.sierrawireless.com.