

Genesis climbs a mountain to prove wireless Internet can deliver advanced telecoms

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It is difficult to imagine a tougher place for testing a modern wireless telecommunications network than in the deep valleys of the Pyrenees. Yet it was amidst the high mountains of north-east Spain, where the four-nations team behind the Celtic Genesis project proved that Internet voice technology (VoIP), transmitted over advanced, high speed wireless broadband (WiMax), can provide rural communities with a reliable service for telephones, video and other multimedia applications.

The success of the [prototype system](#) platform indicates to telephone companies and Internet service providers the possibilities for opening new markets, including low-cost telephony in emerging economies. The first example of a full VoIP telephone service with multimedia services, based on the Genesis platform is already open, operated by Embou, the [Internet service provider](#) whose infrastructure provided the "real situation" tested in the mountains. Six other partners contributed to Genesis with software and hardware to build the architecture of the platform. A technical institute, acting as a catalyst for the project, completed the line up of partners.

The focus of the Genesis project was ensuring compatibility with wired and wireless networks. The field test, held near the end of the two-year project, involved providing VoIP telephone and other multimedia services to a small group of business offices. The system could access traditional networks, too.

According to Mark Roddy, the project coordinator and manager at the

Dublin based Lake Communications, Genesis provided seamless use of a high quality service, plus access to various Internet-based applications.

"A considerable amount of work went into building and testing the system in the laboratory. The rural testbed was the final proof we needed that the system is viable. It also provided invaluable feedback from users that is helping the project partners to further develop their products."

Genesis provided Lake with an opportunity to develop and test a prototype switch for handling voice and other services transmitted by VoIP over networks. The company also contributed system configuration management.

Alvarion, a pioneering world leader in WiMax technology, used Genesis to test a new base-station subsystem that regulates bandwidth allocation and controls admission to the network. Telefónica I+D, the R&D wing of the Telefónica Group, Spain's biggest telecommunications operator, introduced advanced services, such as auto-conference featuring a user-presence detector.

MailVision, operating from Haifa, Israel, introduced controls for Internet multimedia sessions, including voice and video, as well as games. Gintel, from Trondheim, in Norway, supplied technology that enables a telecoms operator to host communications services that users can access.

First, the partners built and tested the system in a laboratory run by the Instituto Tecnológico de Aragón (ITA), which also coordinated the integration of platform elements. Bench tests proved the system with digital transmission over a standard telephone line. Three months before the project ended, ITA's engineers transferred the system to Embou's WiMax network. They installed system controllers at a mountain top base station and equipped the 10 local offices taking part in the real-user trial with Lake's prototype switch for WiMax access, and key-feature telephones with break-out capability to the public telephone network.

Santiago Martin, a Project Manager with Telefónica I+D, who coordinated the project in Spain, says that "having real users at that stage of research is not so common, and it is easy to lose sight of how products can be used in real situations. Opinions and feedback from users is vital information for business development units."

Spin offs from Genesis are wide ranging and on going. Some partners submitted papers or propositions to technical standards forums and other organizations. An obvious result was Embou opening a high quality VoIP telephone service, which is attracting more than 50 subscribers a month, a healthy take-up for an ISP that had only 1500 customers.

Lake has developed its prototype switch into a platform, OfficeStackIP, allowing small offices to have interoperability with network-hosted services. Shipping of this product will begin in summer 2010, with BT, the UK's biggest telecommunication company, the first major customer. Genesis provided Telefónica I+D with valuable experience in the design and deployment of on-line services with new generation session controllers. Feed-back from users in the field-test is influencing the development of products, such as the Text-to-VoIP-Call service, which is now being patented.

ITA has integrated the Genesis framework in its broadband laboratory. The institute, which provides local companies with the opportunity to test web services over various technologies, says that the standardized interfaces and wide accessibility of this system will profoundly impact on application design, enabling new combinational services to be created. MailVision reports "the project gave us access to a carrier-grade laboratory in ITA, and a professional integration process that is very hard to find." MailVision adds that working with Lake and its equipment helped in the development of a new server using mobile VoIP technology.

Alvarion, as a direct result of Genesis, has developed a new management system for WiMax networks. This new product, BreezeAPP, enables WiMax operators to maximize benefits from available bandwidth while guaranteeing quality for voice services. BreezeAPP has been trialed already in Ecuador and Sri Lanka. Gintel is launching new service-hosting products that derive from its work with Genesis. The company states, "The project gave Gintel an opportunity to work within a professional grade test-lab and a well-organized user validation effort, giving valuable inputs for product improvements."

Yet another result of Genesis is ... GenesisX. The main aim of this new Celtic project is to open the platform for mobile devices.

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