A path to the INCA

Since INCA 2's launch last year APD has been extending its functionality in a variety of ways, concentrating on bespoke software capability and developing a comprehensive report package that can be integrated into different end-user environments. BAPCO Journal interviews Martin Worrell, Technical Director.

Last time *BAPCO Journal* spoke with Martin Worrell was exactly a year ago, six months after the launch of INCA 2. It was reported that the launch had been so successful that APD is putting in further measures to ensure supply keeps up with demand.

The first area that has seen development is the front end interface. Worrell explains that APD has developed a front-end web based interface, which means that users can quickly access INCA 2 information via a simple browser, without having to install and invest in specialist software that is time-consuming to install. The system can integrate freely available web mapping such as Google maps and Microsoft Bing maps, explains Worrell. "Some organisations need the ability to integrate the data they receive from the INCA 2 into their own solutions often with a number of mapping layers. Many of our recent customers have wanted this capability as an option."

Next APD has been looking at creating end-to-end software solutions that go beyond merely sending tracking information from the vehicle. INCA 2 end users and integrators can now effectively create their own applications across the whole platform, from the vehicle device to the web mapping and on to the web-based reports, in much the same way that apps are being created for iPhones. "These custom applications deal with a particular customer's data, eg we could be dealing with sensory data from a locomotive, or remote fleet management monitoring, and representing that in a web-based co-ordinated manner as part of a reporting system."

While few end users have gone as far as writing their own applets (ie programs written to run in the Linux framework in INCA 2), APD is writing applets for around six customers, albeit not (yet) any from the emergency response sector. Worrell believes such flexibility will be useful to the emergency services, especially as public sector accountability is resulting in greater scrutiny – and the current economic climate suggests this will increase: "We are seeing a greater demand for visibility in how business processes are running, as well as far greater integration between the vehicle, the mapping and the control room technology." Norfolk police is one such example of integration, where APD has supplied a mobile data solution that is also a tracking and automatic routing solution: "Here there is integration with the command and control system, so the ICCS sends a message to deploy and automatically shows where the scene is, while automatically plotting a route. And if a higher priority turns up then this a vehicle can quickly be re-directed."

EU project – INCA 2 in Europe

APD is involved in the EU Seventh Framework research project Emergency Support System, which aims to outline a framework and prototype for a European crisis management strategy. The end result will include a set of agreed and open protocols that will help guide procurements across the EU, as Worrell explains: "We are working with 14 other partners on the four-year programme, which has been running for around six months. Here we are using INCA 2 to capture sensory data of crises happening in the EU and then processing and combining the data before sending it to crisis managers."

Field personnel gathering sensory data (chemical/radiological) with their PDAs will be using INCA 2 to send it back to a crisis centre: "Or INCA 2 could be in a permanent installation, interfacing with sensors that are constantly monitoring the area."

INCA 2 – in brief

Usually described as a single pipe to the outside world, INCA 2 is an IP-enabled vehicle tracking, monitoring, control and connectivity solution that does away with additional broadcasting components for MDTs and PDAs.

The system architecture is simple: the on-board INCA 2 connects to onboard equipment (MDT and antennae), as well as the communication cloud to the gateways and thus to AVLS database, map clients etc.

INCA 2 has dual bearer capability, so Tetra can be used for safety critical information and GPRS for lower security radio. Its IP routing capability via GPRS is equivalent to the office/home router.

Functionality includes GPS and GPRS, as well as interoperability via RS232, Ethernet and USB. As well as handling specialist bearers Tetra SDS, Tetra Packet IP, MOBITEX and 3G, INCA 2 is capable of transferring data via WIFI (to depot hub for example) or via USB mass storage.

CANbus technology can also be interfaced, so INCA 2 can report on emissions monitoring (for compliance), driver performance, and vehicle faults.

The hardware also allows for integrators to add bespoke functionality via their own applets.