



v2track: Much more than asset tracking

IT'S NEARLY ten years since v2track was founded by Kiwi brothers Bevan and Kylan Diprose, initially to provide a cost-effective tracking and communication solution for remote flying. The project combined their skills well, with Kylan (at the time) working as a commercial pilot in remote parts of Australia and Bevan working with his electronic engineering skills back in New Zealand. Their hybrid Iridium satellite and cellular technology was soon seen by other operators and quickly commercialised, growing over the years into a sophisticated product offering now tracking aviation, vehicle and marine assets in real-time across the globe for numerous international clients. The product has evolved to include a variety of advanced messaging options and other features thanks to close customer relationships and customised solutions which have later been adapted to become part of the generic product offering. Two such examples include helicopter specific telemetry and triggers, and Electronic Flight Bag data recording.

Much of v2track's growth during the last decade has simply been by word of mouth, with a result that the product has become quite well known and established throughout Australia, Papua New Guinea, Indonesia and Nepal - more so than it has in New Zealand. Kylan says that user numbers have steadily grown at a rate he and Bevan were very comfortable with, without the need for intensive marketing campaigns. It is certainly time however to tell the story to a wider audience, many of whom are likely to be in a position to benefit from some of v2track's unique features if they choose to adopt the product.

The cellular advantage

v2track was designed to be as cost efficient to run as possible, its point of difference being the advantage achieved by automatically switching from satellite to cellular communication when the latter is in range. The very low cost of cellular operations also facilitates frequent tracking updates – the default for which is 15 seconds. Given the extent and reliability of cellular coverage available now, it's a powerful option which provides for significantly refined position reporting accuracy compared to the 2 to 4 minute update rate most commonly used on devices that rely solely on much more

expensive Iridium satellite tracking.

v2track uses cellular coverage by default and then switches to satellite when data can no longer be transmitted through the cellular network. Update intervals via satellite comms are adjustable, but often set to 2 minutes. Kylan says the cost benefits of the system can easily run to hundreds of dollars a month across a medium sized fleet – whether for position or telemetry reporting. As well, users who remain in cellular coverage areas can opt to run the device in cellular only mode and avoid the cost of an Iridium

subscription altogether. The cellular link also enables lower tracking management overhead for staff due to automatic syncing of the firmware updates, message address book, pilot list, authorised Bluetooth devices, airstrip lists and weight & balance / flight manifest templates.

Using v2track

Each v2track device has a front panel with three buttons. One is to send an emergency message, one is for forcing a position mark, and the last is an "I'm OK" button. These can each be set up to send the relevant pre-set message to nominated recipients via the v2track Viewer web portal, SMS or by email.

For devices in aircraft, position reports are automatically triggered when the system detects a take-off or landing, or when a heading changes by more than 30 degrees. Other internal gyro and accelerometer triggers can also be set.

Logging in to the v2track Viewer web or mobile portal allows authorised users to watch all vehicles and sensors in real-time, with historical information retained for future reference if required.

Messaging

v2track devices can be used for 2-way messaging using a Bluetooth connected tablet app, or via an optional wired LCD screen and mini-keyboard. Messages can also be sent from the v2track Viewer web portal to devices or mobile phones. Device initiated messages can be sent to email, mobiles, other v2track devices, and displayed to users on the v2track Viewer web portal.

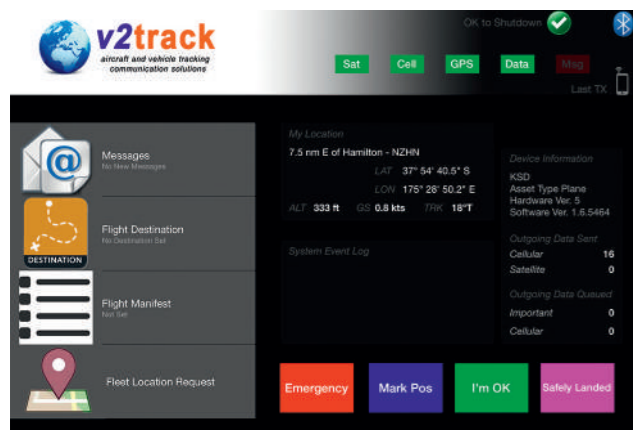
Some users have opted to use v2track communications in place of satellite phones, achieving all their required communications via messaging and avoiding previous 'bill shocks'.

A 'request fleet position' message can be sent out to the v2track server to request the most recent position of a particular asset in a fleet. This information is returned (via cellular or satellite data) and displayed on the vehicle LCD screen or tablet app.

Manifest or job and despatch data can also be captured and automatically transmitted. For aviation this can include details such as



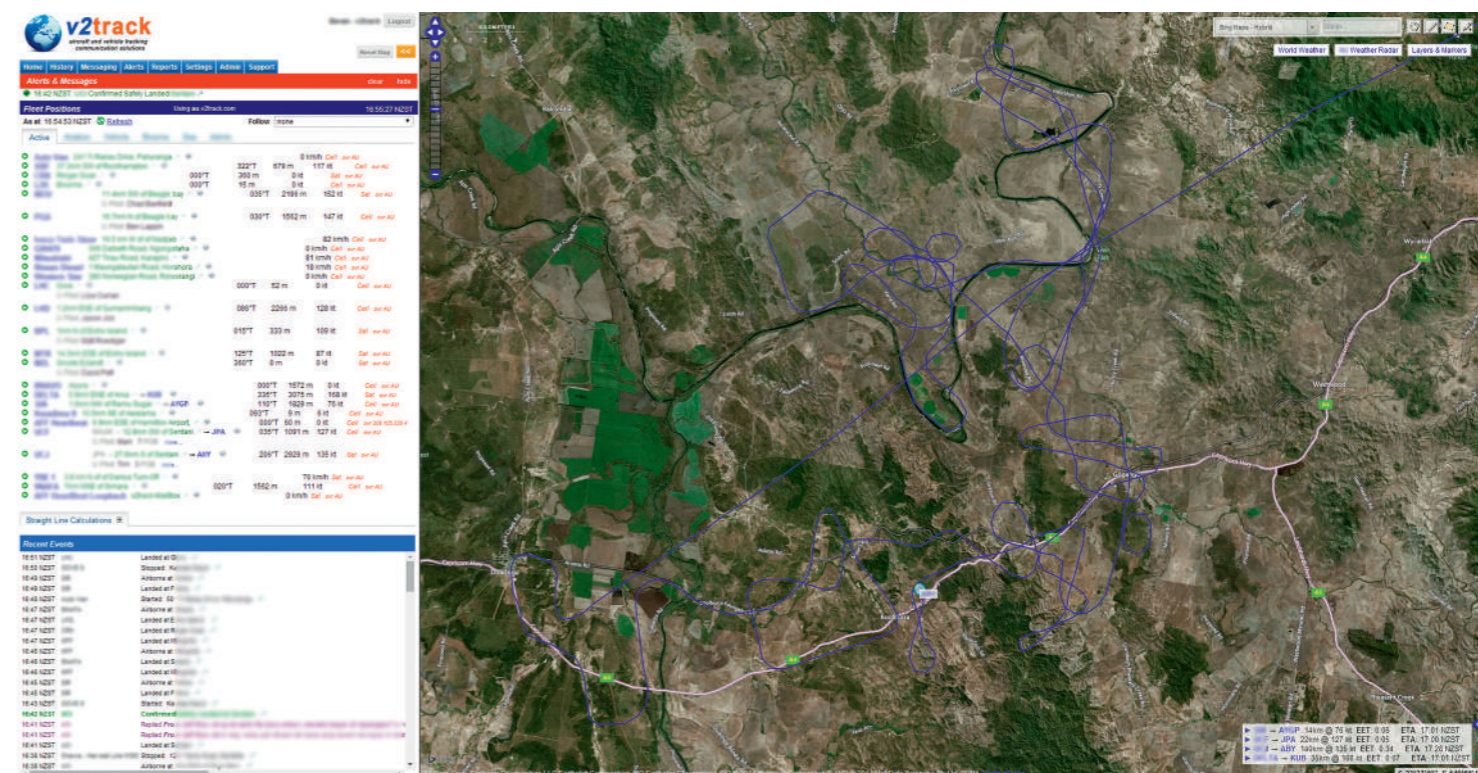
v2track hardware can be panel or remote mounted.



Running here from an iPad, v2track provides an advanced messaging capability including destination and manifest details.



A customer's EFB app linked into v2track via the v2Connect API for data messaging back to base.



The benefits of a 15 second reporting interval are obvious in the detail on this aerial surveying track. (Aircraft names and locations obscured for privacy.)

Name, Call-sign, Planned Altitude, Departure Point, Destination, POB, Fuel Load, Take off Weight and Centre of Gravity – all before takeoff. This provides enhanced flight information for staff monitoring flights remotely, as well as a great record to have recorded against the raw positioning data on the servers – especially in an emergency situation. Pax and freight details will soon also be able to be listed, potentially replacing flight manifests for some customers once approved by appropriate authorities.

Alerts

Flight Following alerts are customisable, but generally set up relative to proximity (if an aircraft appears to have landed more than 1.5 nm from an airstrip) or relative to reporting (if a device hasn't been heard from for a nominated period and the last position report it sent was moving). There is also an advanced helicopter flight following mode which prompts the pilot to confirm the safe landing for any location not recognised in the company airstrip/helipad list. A variety of SMS, email and website alerts can also be set up for v2track devices. Motor vehicle examples include for speeding, out of hours use and date based alerts – useful for tracking registrations, servicing and odometer readings. Alerts can also be set up for notifications when an asset enters or leaves a predefined geographic area.

History and Reporting

Users can drill down into trips via the v2track website, including playback and vertical profile plotting as well as Google Earth or KML exports. Pilot and flight manifest details are stored alongside the trip data, and customised reports can be created as required.

The Hardware

A v2track system can either be portable (with internal GPS and Iridium antennae, or fixed – with external antenna connectors on the base unit. A range of external TSO antenna are available. The fixed unit has an optional remote mountable front panel to provide for elegant installations where space is at a premium. v2track

devices can also be communicated with via USB connected LCD screen or iPad, Android or Windows 8.1 apps via Bluetooth.

External device control and Telemetry

A v2track device can take feeds from a variety of sensors and transmit this data back to a website interface. This capability has been utilised by several customers whom the company has developed specific solutions for. Examples include:

- Automatically triggered alerts for generator failure, excessive G, rapid descent, or other alerts without pilot interaction.
- Relay of Garmin waypoint and destination reports from the aircraft GPS, with track and distance to go calculations, particularly useful for monitoring flight progress around weather diversions.
- Audio output for new message notifications.
- Stage of flight reporting for helicopters via collective position, engine, rpm and warning sensor triggers. As well as early detection of anomaly and emergency situations, these triggers allow proper detection of the difference between engine running on ground (a safe state) and hovering (not yet safely on the ground) which is not possible on most competing tracking systems. (Bevan notes that this feature is already positioned to satisfy the upcoming requirements for UN helicopter tracking requirements around entering and exiting hover.)
- v2track can output AFF data to third party systems.
- FlightAware and Takefile interfaces are available.
- A v2track device can be used to remotely switch systems on and off – for example cutting a vehicle's ignition if it was stolen or taken beyond a prescribed area.

Customised Solutions

An open messaging API (Application Programming Interface) is available for the v2track hardware. This allows v2track users and 3rd party software developers to integrate their own phone and tablet apps (iPad, Android and Windows) via Bluetooth or direct RS232 serial link. v2track can supply a HTML5 example template



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*Specifications apply to standard equipped aircraft (with DME, TAS, WX500, AUX, TKS, standard light weight interior without adjustable seats), if not other wise stated. The above data are approximate specifications and may change without notice.

suitable for use as a starting point for building an app.

One such client operates aircraft over remote jungles in South East Asia. They have developed a company specific iPad EFB (Electronic Flight Bag) for their pilots for flight planning, performance calculations and passenger manifests. The v2Connect API has given them a way to send this data back through the v2track system before take-off from remote airstrips. Operations staff can now monitor the fuel, passenger numbers, weight, balance and destination of the flights as they progress, all sent from their own fully fledged EFB mobile application.

Other customised aviation solutions for clients have included high-rate raw GPS data recording and transfer to gather detailed take-off performance data for a Part 146 design organisation, and detailed aircraft ground tracking with current gate, hangar or taxiway position reporting for a large airline.

v2track Users

v2track has a diverse range of users, many of whom operate in remote locations around the world.

Tara Air is the newest and biggest airline service provider in the Nepalese mountains, with a fleet of seven STOL turboprop aircraft providing scheduled and charter flights in the hills and mountains of the country from the Far East to the Far West. Especially given the terrain and fast changing weather conditions in Nepal, v2track provides important information for operations staff to manage and monitor the safety of each flight. As a result of approving v2track for use in Tara Air's fleet, the Civil Aviation Authority of Nepal (CAAN) endorsed v2track which is now also used in other aviation companies operating in the region.

Here in New Zealand, Deep South Helicopters use v2track to transmit flight route and passenger details back to their operations base in Gore before every flight, allowing ground staff to monitor the flight with extra insight as to who is on board. Grant Goatley, CEO and Chief Pilot of Deep South Helicopters says "v2track allows us to always know who's on board and where the aircraft is at all times - something that you can't put a price on." The detail and flexibility provided by v2track is apparent while operating around remote parts of Stewart Island. Many places on the ground lack cellular coverage so v2track uses its Iridium satellite link. Once airborne a cellular signal is often available and tracking then takes place at 15 second intervals - greatly improving search and rescue chances if there were ever to be an emergency of some kind.

Yajasi Aviation is an Indonesian not-for-profit organisation that has been flying to Papua's most isolated communities for over 20 years. Nate Gordon from Yajasi says they are very pleased with v2track's reliability and especially its 2-way communications capabilities. "Pilots frequently send critical messages through to our Flight Coordinator or Maintenance personnel that are received directly on the recipient's mobile phones. Our Flight Coordinator can much more efficiently communicate routing changes to our aircraft - and even if the aircraft is on the ground in the field, he knows the aircraft will get the message when it powers up. The product support that we've received from v2 has been second to none. They have implemented many changes and improvements that we have suggested in time frames that just don't happen elsewhere in the asset-tracking market. Keep up the great work, v2!"

For more information

Contact Kylan or Bevan Diprose or one of their team at v2track on 07 974 9274, e: info@v2track.com or visit www.v2track.com

AirVenture Oshkosh

Everyone should go at least once!

LAST YEAR more than 500,000 people and 10,000 aircraft attended EAA AirVenture Oshkosh. But it's more than just the world's biggest airshow. It's an enormous gathering of like-minded enthusiasts. There are hardly any fences because people attending know how to behave around planes. The flight line is just a marking on the grass, and nobody crosses it. The people sitting on folding chairs under the wing are the owners, and they will be delighted to engage in conversation with you about their pride and joy and passion for aviation. There is an astonishing amount to see and do - seminars, workshops, trade exhibitors, daily airshows, and so much more. Many visitors have returned for the second or third year running and still not seen it all.

With an event this big, it's a very good idea to join an organised tour. That way, all the travel logistics are sorted on your behalf, and you've also got someone right alongside for advice and support while you're there. It's also a very good idea to join a tour with plenty of experience of the event and glowing testimonials to back that up. This year will be the 29th trip to EAA Airventure Oshkosh for Gaye Parady Travel (so that ticks the experience box). As for a testimonial, the following from John is typical: "Loved Oshkosh and the extended tour. I was very busy at Oshkosh - waking up early and back late almost every day and struggled to get in everything that I would have liked to. I think that if AirVenture had lasted a month I still would have struggled to get in all the forums and workshops that I would have liked to have attended. It has everything that an enthusiastic aviator would like to see - and I enjoyed everything that the extended tour had to offer as well. Thanks very much for your efforts on our behalf."

This year Gaye's tour departs NZ on 18th July. After a night in Chicago, a coach trip via the Harley Davidson Museum at Milwaukee then leads on to Oshkosh. Accommodation is at the University of Wisconsin. The next day is the start of an amazing week at the EAA AirVenture. Tour participants will also enjoy a visit to Chino, the Planes of Fame and the Yanks Air Museum. An extended tour option leads to Seattle and the Spruce Goose at Evergreen Museum by Portland, then the Boeing Factory and museum of Flight - also the home of the Blue Angels.

Then there's a trip down the lochs to the open sea where some will depart for home and others will carry on to Vancouver and join a cruise bound for Alaska. The cruise is for 7 nights up through the inside passage and on to Seward, with further options to see more of Alaska's wonderland, animals and real wilderness. As Gaye says, "It's going to be a really great trip!" See Gaye's contact details below:



Tour departs 18th July. Contact Gaye Parady today on 07 574 1950 or 0274 939 073 Email: travel@gayepardy.co.nz or visit www.gayepardy.co.nz for more information



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