

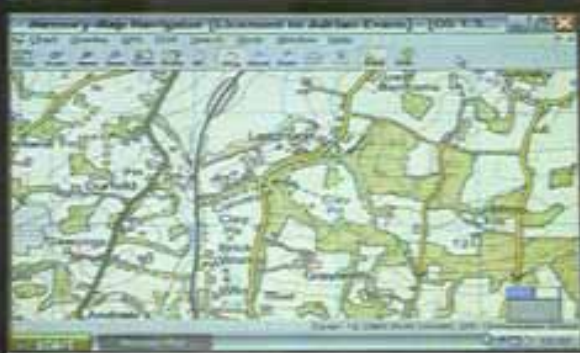
EXTREME MACHINE GPS DEFENDER



Extreme Machine GPS Defender

Right: Ordnance Survey map, from Memory Map Navigator, moves in time with vehicle

Far right: satellite image of the same area (right) at identical scale



"My objective was to create a system that was better than a hand-held GPS, and I've achieved it"

"I enjoy touring and camping in the Lake District and mainland Europe," says Adrian. It's a pastime made easier by the GKN overdrive that had already been fitted to the 90 when he bought it.

And Adrian doesn't get lost when he goes on his travels. Never has done and never will do. The reason? "My objective was to create a system that was better than a hand-held GPS, and I've achieved it," he says.

His initial idea was to use an old laptop, but he couldn't fit it neatly into the Defender. He then started surfing the net and looking for other solutions. "I didn't know much about mini PCs, but I soon discovered that they're quite cheap and certainly powerful enough. I took out the CD drive and hard drive from my laptop to keep costs down, I then built the PC myself, incorporating a new motherboard and case," says Adrian.

It's a neat set-up, the best part being the dash-mounted screen. Adrian explains: "I found the screen on a US-company website. They make various types: some replace the existing radio, with a pop-out,



Roof-mounted aerial, hidden beneath the Hannibal roof rack, finds a strong signal



Rebuilt PC features a new keyboard, which can be hidden away when not in use

RIGHT: extreme

RIGHT: extreme off-road conditions apparent in the movie *Ice Age* on DVD. Over on telly, meanwhile, it's good old *Buffy the Vampire Slayer* (second right)



80 Land Rover Owner November 2003



Left: Microsoft MapPoint – it's a conventional atlas, ideal for finding urban locations

Far left: split-screen, showing satellite image of mapped area

flip-up action, but that wouldn't work in the Defender. The screen is a touch-type, which means a mouse and mat aren't needed.

Adrian can choose whether to display a full-screen OS map, showing all the usual annotations and contours; a full-screen aerial photograph that shows every house, hedge and tree; or a 50/50 split showing both. Whichever view he selects, the 90's position is superimposed on the image, and the arrow moves in real time.

Being able to see both a map and a photograph of the same area makes a big difference. The PC doesn't use that much power, but it is sensitive to power variations, as Adrian found.

"At first, I ran it on the car accessory supply, but the drop in power when I started the engine caused the computer to reboot. The solution was to fit a second battery. I've gone for a pair of red and yellow Optima batteries. The second one will also power a winch and perhaps a fridge." Adrian will be fitting these prior to a planned trip to Morocco's Atlas Mountains.

The 90 also has two alternators; the extra one purloined from a breaker's yard Discovery 300Tdi. They sit where the air-conditioning pump once was.

The electronic trickery of Adrian's on-board computer doesn't stop at providing aerial photographs of his position, either, as he explains.

"Because the system has a wireless connection, I can download files and music from my home computer while I'm sitting in the Defender outside, without unplugging anything. I can also upload stuff from it to my home PC – and I can watch terrestrial TV."

It all sounds terribly complex – and it is. Working in the computer industry helps, of course, not to mention a background rooted in bytes, RAM and hard drives:

"My A-level project was a BBC computer running a car-based route-planning system that I wrote myself. That was 18 years ago," Adrian recalls, trying to make up his mind whether to go greenlating, download some tunes or watch a bit of TV. In this 90, he can do all three.

FANCY HAVING A GO?

In which case, here's a list of all the high-tech gadgetry you'll need, together with some useful contacts.

VEHICLE CARPUTER

- Mini ITX Case (£60); www.casetronic.com
- Motherboard with 1 Ghz processor, onboard video and sound, USB 2 (£110); www.mini-itx.com
- 512Mb RAM (£50)
- DVD drive (£60)
- 40Gb 2.5-inch laptop hard drive – more resilient to bumps (£80)
- 7-inch LCD touch screen (£400); www.cartft.com
- 12v power smoothing circuit – built himself for £10
- Mini keyboard (£30); www.kustompcs.co.uk
- Various cables, wiring, plugs etc (£50)

ACCESSORIES

- USB Win TV receiver (£30)
- Haicom USB satellite receiver (£90); www.globalpositioningsystems.co.uk
- Bluetooth USB dongle for wireless web connection via mobile phone (£30)
- Belkin 10Mb USB wireless network adaptor (£50)

SOFTWARE

- Windows XP (£100)
- Microsoft MapPoint Europe (£100)
- Infomap Navigator – navigation with voice (£40); www.directions.ltd.uk
- Memory Map Navigator – full 1:50,000 OS map showing half of UK (£170); www.memorymaps.co.uk



90's twin batteries: red for all the vehicle systems; yellow to power the computer



Second alternator, from junked Discovery 300Tdi, provides charge for yellow battery

- www.greencard.com
- Memory Map Navigator – full 1:50,000 OS map showing half of UK (£175); www.memory-map.co.uk
 - Full satellite maps of southern UK (£80)
 - Winamp 3 media player (freeware)
- OTHER USEFUL LINKS
- www.digitalww.com
 - www.letscommunicate.co.uk/carputer/http://tinitx.com
 - www.mp3car.com
 - www.mp3car.com/usersites/heslop8/pin_wirings.htm#vga
 - www.xenarcdirect.com/
 - www.zorg.org/projects/carpc.shtml



LEFT: how to go greenianing in Wales and catch up with the climax of the Test Match at the same time

SECOND LEFT: ...or you can even order your groceries online