

TITAN IS DEAD –

Long Live *ATLAS*!

Brian Bushell

All right, I know, I'm being disingenuous. *TITAN*, the FR's bespoke ticketing and reservation computer system, isn't really dead, but it has gone through such a major revision that a new name seemed appropriate. Outwardly, it looks almost the same, and you would need to see the old and new screen displays side by side to notice the differences. Inwardly, however, a lot has changed. Nevertheless, much of the original program from 23 years ago is still there, and doing what it was designed to do, which is still just as relevant today.

So welcome to 'Son of *TITAN*', christened *ATLAS* (the Advanced Ticketing Logistics and Accounting System). Having coined one excruciating acronym, I then thought up three more to go with it - you will meet them all shortly...

The most significant change between *TITAN* and *ATLAS* is the integration of the FR and WHR into one system. *ATLAS* can issue tickets and make seat reservations from any station to any other station. Word of this has obviously spread. The new system went into use at Harbour Station on New Year's Day, and it had not been running very long before a gentleman came in and requested a ticket from Minffordd to Blaenau. '*I know you can do it*', he confided, and *ATLAS* duly fulfilled his request.

TITAN was designed for use at terminal stations, to deal only with trains going in one direction. But *ATLAS*, with its ability to issue tickets to any station, can cope with trains going in two directions, and the screen display at Porthmadog shows departures to both Blaenau and Caernarfon (I use the present tense because my test systems are already using the provisional full summer timetable). If, therefore, the booking clerk at Porthmadog selects an 'alternate origin' to issue a ticket say from Waunfawr to Beddgelert, the screen will display the correct departures, Up and Down, from the selected station, and the ticket will be printed with the correct, all-important, 'last return' train time.

ATLAS takes advantage of the huge advances in computers since *TITAN* was first conceived. The vastly increased disk storage capacity and speed, both in terms of processing in memory and in transferring data to and from disk, has facilitated some important structural changes. Most notable is that fare tables and train schedules are now held on spreadsheets. In some cases, the spreadsheets are read directly by *ATLAS*, but in other cases they are read by separate conversion programs which generate conventional data files tailored to specific days or stations. For instance, the basic fare table spreadsheet for ordinary fares is read by a separate program which generates local fare tables, including all the various discounted fares, for every single station on both lines. Another separate program, which runs automatically overnight, generates the individual schedule and train loadings file for the next day, for every station; it incorporates into the loadings any advance bookings for the coming day.

Using spreadsheets has advantages and disadvantages. Accuracy is essential, and great care needs to be taken in setting them up, but once they are done, life becomes so much easier. And whereas *TITAN* used to keep its fare tables and the current day's schedule and loadings in memory the whole time, *ATLAS* reads the generated files as and when it needs them without any noticeable deterioration in speed. Interestingly, the generated fare tables and schedule and loadings files alone take up over twice as much disk space as the entire *TITAN* system used when it was first introduced in 1985.

Before discussing other changes within the system, I must mention the environment in which the software operates. *TITAN* was written in good, old-fashioned BASIC programming language, developed at a time when windows were clear things you looked *through* rather than confusing things which looked *at* you as if you were stupid. It ran quite happily under MS-DOS, and also functioned perfectly under Windows 98, apart from the occasional argument with Windows as to who was going to use the printer. However, with Windows 98 being phased out, since Microsoft withdrew support a year ago, we were faced with a complete redevelopment of the whole system, at horrendous cost, unless we could get *TITAN* to live with Windows XP or Vista, both of which can run BASIC programs but cannot cope with many aspects of screen displays. I tried Microsoft's 'Virtual PC' which was supposed to solve all of our problems (it didn't...!) and was on the verge of giving up. However, everyone can probably look back on life and say '*if it hadn't been for that lucky break...*'

TITAN's lucky break, and stay of execution, came in April last year, when I found on the internet a DOS emulator called DOSBox, which would run under XP or Vista (or even Linux) and allow the user to keep running their old DOS-based programs. I downloaded a copy and started carrying out tests with *TITAN*. DOSBox had been designed to enable games enthusiasts to keep their old games running on new computers, and it was a very clever program, but it soon became apparent that it could not cope with certain business network functions. In desperation, I fired off an email to the DOSBox development team, explaining our problems, and sank into my chair feeling that the end of an era was approaching.

Being a pessimist, I am never disappointed, and occasionally pleasantly surprised. Imagine, therefore, my surprise and delight when an email came back from a very nice man in the Netherlands, one of the brains

behind DOSBox. Not only was he obviously fully conversant with the inner workings of old DOS programs and modern operating systems such as Windows, but he also understood our problem and offered to help.

Within days, I had received a special version of DOSBox which kept a detailed log of what *TITAN* was trying to do, so that he could pinpoint the exact nature of the problems. Also, I sent him several small test programs which replicated the *TITAN* functions which were causing difficulties. Over the next few weeks, updated versions of DOSBox kept arriving, each curing another of our problems. By September, all *TITAN* terminals, and *TRACS* (the control office system) were running quite happily under our own tailor-made version of DOSBox, within Windows XP. Emulators never run quite as fast as the real thing, but all the essential functions, where speed is important, are perfectly satisfactory. Without this major break-through, the upgrade to *ATLAS* would not have been happening. Heartfelt thanks are therefore due to Peter Veenstra from Assen. His valuable contribution has opened new doors (and Windows!), and saved the Company a great deal of money.

Once the new environment was proven, redesign and redevelopment got under way very quickly. Getting *ATLAS* operational for New Year 2009 was first priority, partly to avoid the upheaval of changing systems in mid-season, but also so that a full year's data was held on one system. Unlike *TITAN*, which ran on four-weekly accounting periods, *ATLAS* accumulates data by calendar month. It also separates FR and WHR bookings and revenue. The early changeover has also given me time to resolve the inevitable teething troubles without queues of passengers breathing down my neck.

At the same time, I also needed to get the new group travel booking system (previously called *TARGIT*) ready for New Year, too. The new system runs with a combined database, holding details of all group reservations for both railways. But it no longer holds details of individual bookings for travel more than a week ahead, these are now held in the new seat reservation system, of which more shortly. The upgraded *TARGIT* got a new name too - *ARGUS* (*ATLAS* Reservations for Group UserS). The change also involved writing a one-off conversion program. The booking office has been entering group reservations up to March 2009 through *TARGIT*, and these needed to be transferred to *ARGUS*. The final stage in getting operational on 1 January involved alterations to *TRACS* to enable it to talk to the new *ATLAS* and *ARGUS* systems.

Some features are still under development, but all should be fully operational by the time you read this. There are no seat reservation facilities at the moment. Unlike *TITAN*, which dealt with the actual allocation of seats in response to each request, *ATLAS* will pass the requests to a new system, *ARIES* (*ATLAS* Reservations for Individuals). I'm open to suggestions as to what the E might stand for, as the two I have so far are unprintable! *ARIES* will be running on a central server, accessible by any *ATLAS* terminal on the whole railway via a 'virtual private network'. It will provide all *ATLAS* terminals with seat availability details for every train; allocate seats in response to confirmed bookings; provide *TRACS* with details of carriages containing reservations (to prevent the duty controller from putting groups into those carriages); and send seat reservation labels for printing at whichever location is specified in its parameters. The labels will show the stations from and to which the seat is reserved, and the same seat may be reserved twice during the course of one journey. Hence a passenger having a reserved seat from Caernarfon to Beddgelert may find his seat then being taken by a passenger from Beddgelert to Porthmadog.

Running *ATLAS* under XP or Vista has enabled me to take advantage of some Windows-based programs to perform tasks previously performed by my own programs, the use of Excel for the spreadsheets being a prime example. None of the new systems prints anything directly to a printer, everything is written to disk, to be printed by a separate program. In the case of reports, WordPad is used. It is invoked by my own programs, and can be forced to print immediately without displaying the document on the screen.

Tickets are also printed by a program of my own, which obviously has to respond instantly once *ATLAS* has provided it with the relevant ticket details. Working at the booking office counter, you would hardly notice the pause between hitting the 'Issue' button and the ticket appearing. One change is that *ATLAS* no longer produces some of the end of day reports previously produced by *TITAN*. These are the reports of passenger numbers, where passengers travelled from and to, the fares paid, the classes in which they travelled, and whether they travelled single or return. In future, these will be produced by another new program, *ASTRA* (*ATLAS* Sale of Tickets Reporting and Analysis). This will allow the user to specify his own selection criteria, and provide a much fuller analysis than was previously possible. *ASTRA* will work by interpreting each day's audit trail from every terminal. With increased disk space, these are all kept indefinitely.

With moderate good luck, DOSBox, *ATLAS* and his mates will keep us going for a good few years to come. And my next job, once *ARIES* and *ASTRA* are up and running, is to document it all - and teach someone else how it all works!

Finally, for the record, all of the new acronyms are from Greek mythology, continuing the Titan theme. Atlas was the son of Iapetus, one of the original Titans - he was condemned to carry the world on his shoulders, which sounds familiar. Argus was a giant with a hundred eyes who only ever slept with two eyes at a time. Big Brother is watching you?

Aries was the Greek god of war, who later became a Knight of the Round Table, or so it says on the internet - I think someone might have got their gods a bit mixed up there! And Astra were the gods of the five wandering stars - no doubt still they are looking for them. They sound a right motley bunch - I can't imagine them working together for very long!