

COMPUTER SIMULATION



Computer Simulation An opinion by Geoff Mayo

For many years aviation enthusiasts have been able to pretend to be real pilots and air traffic controllers. But for the railway very little existed beyond very simple train driving simulators and signalling simulators. Being a student at Coventry University during the mid- to late 1990s as a Computer Science student, I felt that there was a niche in the market that needed to be filled. Thus SimSig was born out of a desire to have as accurate a signalling simulation as was possible with the computing power – and my knowledge – available in those days.

Back then I knew very little about the IRSE but a certain book called Railway Signalling by O.S. Nock came into my hands – very expensive during my student days but worth every penny! This book gave me my first real insight into the world of railway signalling and still serves as a reference guide for myself to this day.

The specific goal of SimSig was to produce a signalling simulation that would accurately replicate the IECC (Integrated Electronic Control Centre) with SSI (Solid State Interlocking) and ARS (Automatic Routesetting System). Through various contacts on the Internet newsgroup uk.railway and with a signaller who used IECC for his job, I managed to glean enough information to produce an initial simulation of Fenchurch Street on the London, Tilbury, and Southend line. This was released on to the Internet as a trial

to see what the reaction would be. Fortunately the reaction was very favourable and so I was inspired to continue my research into the subject and development of the product.

The first “proper” simulation was that of Liverpool Street IECC. This 18-platform station was perhaps ambitious for a new simulator – but if British Rail Research could roll out IECC to Liverpool Street over an Easter weekend then I would give it a good try as a simulator! This was released onto the Internet and interest continued to gather momentum, with the added bonus that more professional railwaymen were able to provide their input and increase the accuracy and realism of the simulator.

Late in the 1990s I joined Westinghouse Signals, firstly as a sandwich year student working on the Oslo T-Bane, and then to return full-time as a software engineer working on the Dartford (North Kent) ARS. Again, this further increased my education into the world of railway signalling and I was fortunate enough to have an IRSE Fellow introduce me to, and nominate me as a student for the IRSE.

Development continued whilst at Westinghouse with their blessing – although they weren’t interested in it as a product (too small a niche perhaps?). Further simulations appeared including Swindon B (controlling Didcot), Southampton (part of Eastleigh PSB),

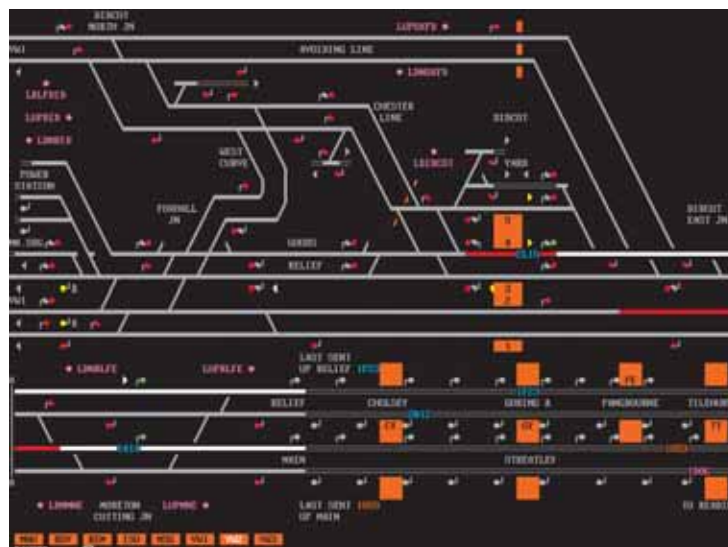
Waterloo (part of Wimbledon ASC), and Stafford (a combination of Colwich and Stafford boxes).

In the initial years simulations were paid for by cheque and I packaged up a CD to send off to the customer. This was very labour intensive and so eventually SimSig became free but the customers had to download the software themselves from the SimSig website (www.simsig.co.uk).

Of course, since it was now free, interest really gathered pace!

In September 2000 I joined a new company called The Railway Engineering Company Ltd (TRE). This was an innovative organisation run by three directors with vast railway knowledge between them who aimed to deliver high quality software solutions to the railway industry. I showed SimSig to them and they were impressed enough to come to an agreement whereby TRE would develop the SimSig code into a simulator suitable for professional use – called TRESIM – whilst I was able to continue providing for the home market. This agreement still stands and to date TRE have delivered dozens of simulators to signalling centres up and down the country – and now abroad as well. All from a simulator developed in my own time!

Someone suggested that the SimSig community gather for a few drinks. This



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we did one fine sunny day in the Wetherspoons pub outside Bristol Temple Meads. It was an enjoyable day as names were put to faces and more contacts were made, with people sharing information, knowledge, and stories. We agreed that this should be a regular occurrence and, as a result, we now meet three times a year in various hostelrys around the country: usually July in central London, November in Derby, and March as a "floating" venue which changes each year.

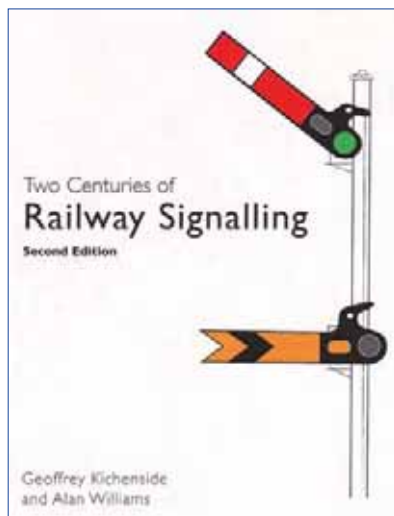
During these meets people bring laptops in order to play SimSig whilst having a beer or three – a combination of which is probably the least realistic feature of SimSig! By now development had reached a point where multiplayer SimSig was possible, both as a server with multiple clients playing the same simulation, and later as adjacent signal boxes "chaining" together. One such session saw around fifteen laptops connected in a network playing King's Cross, Cambridge, Peterborough, and North London Line simulations!

As of writing this article, we now have Westbury, Trent, and Sheffield simulations released, with more on the way. SimSig has grown from a one-man-band to a small development team of two software developers, eight simulation developers, and a host of testers, many of which either work on the "real" railway or have significant experience of such.

If you want to have the experience of being a signaller, I would like to invite you to visit the SimSig website at <http://www.simsig.co.uk> and try it for yourself for free. I hope it brings as much enjoyment to you as it has done for me writing the software and developing the simulations! There is a friendly and lively forum on the website where you can talk with fellow enthusiasts about SimSig or other railway topics. You can also meet up with us: date and venue details are on the forum.

What of the future? SimSig is now around ten years old and is heavily oriented towards British signalling and operations. The next development may well expand the simulation into allowing overseas railways to be simulated. As they say, "watch this space"!

Finally, I would like to thank the IRSE NEWS for allowing me to publish this article. I hope it has given you a little insight into the philosophy and history of SimSig.



Book Review By Ian Allison

Two Centuries of Railway Signalling

By Geoffrey Kichenside & Alan Williams

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Whilst this book was first published in 1998 and was quickly reprinted, this second edition, which was released at the beginning of 2009, has been refreshed to make it much more pleasant to the eye. This book explains the beginnings and subsequent development of railway signalling through the ages to the present day. The text, diagrams and illustrations have been slightly altered to make the understanding of each of the subject matter clearer. It is also good to note the increased amount of colour pictures used in preference to black and white and that the book has now been adjusted to have more of an international perspective than the first issue.

The book starts off detailing how the basic signalling system has evolved, with reference to the early modes of operation such as time interval working, the first types of signal and the first semaphore, followed by the regulation of the railways and their safety. This is closely followed by the first steps in communication, such as the initial usage of the telegraph, the combined usage of the telegraph with the block system and early single line operation in the UK.

The book then quickly moves on to the Victorian influences such as the signalling pioneers who introduced the lever frames, mechanical interlocking and the new signal boxes, along with the resistance to change and the very early beginnings of standard signalling practices. As a consequence, it follows on from this subject matter to that of accidents and incidents, particularly that of human and technological influences and of the weather and the problems that this has caused historically.

The book now moves onto standardisation following the 1889 Regulation of Railways Act and the items that are taken for granted on today's railway. This being that of the wide scale usage of interlockings, facing point locking, detection and indication, slotting and the usage of treadles and axle counters. It then moves on to the influence of speed restrictions, on the railway, along with reminder appliances for the signaller and the usage of detonators.

The block system and single line operation is comprehensively covered continuing further on in the book, followed by the introduction of electricity and its prompt integration into signalling systems for power and electromechanical operation.