

View From The Desk – 30 years of the SCSC



Tom Anderson and Joan Atkinson were key to the running of the Safety-Critical Systems Club for the best part of three decades. They often sat 'behind the desk', managing proceedings and ensuring the (mostly!) smooth operation of events. Tom and Joan reflect on the last 30 years of the Club and share some history of its formation and memories of the Club's activities and events.

*A long, long time ago
I can still remember*

These opening words to American Pie (Don McLean, 1971) refer to February 3, 1959, *the day the music died*, which was only just over 12 years earlier. In this article we will look back over the formation and activity of the Safety-Critical Systems Club, established in 1991 (with some reference to prior art going back to 1984) – so that's reaching back 30 years and more. As a result, to tell the truth, we don't now "still remember" lots of stuff.

Furthermore, if you're after good solid technical recollections of the evolution of principles and practice in engineering software-intensive systems for safety-critical applications, you won't find them here. Fortunately, the back catalogue of this Newsletter: *Safety Systems* and the proceedings of the *Safety-Critical Systems Symposium (SSS)*, published annually since 1993, comprehensively cover that deficiency. Indeed, in Volume 25, Number 3 of *Safety Systems*, you can read an excellent overview [1] of the first 25 years of the *Safety Club*, to use the familiar colloquial abbreviation.



Instead, we plan, basically, to gossip about those earlier times, as we watched (and, of course, shared in) the successful development of the Club; we hope you'll find some nuggets of interest in what is a somewhat discursive, and very informal, memoir.

How it all began



Way, way back, in the early 80s, concerns in industry and academia about the all too often highly unreliable behaviour of software, led to the formation of a national group (these days it might be labelled a focus group) of individuals which – after a pause for reflection – took the name Centre for Software Reliability (CSR). Needing a formal underpinning for this group, Bev Littlewood (at City University) and Tom Anderson (at Newcastle University) established two university research centres, also named CSR. The main focus at CSR (City) was on the assessment of software reliability, whereas CSR (Newcastle) concentrated on reliability achievement. This proved to be a timely initiative, since shortly afterwards the UK Government’s Alvey Programme [2] drew active support on both of these topics from CSR.

An early CSR action had as its aims: to increase awareness of the need for more reliable software, to disseminate techniques for assessing and achieving it, and thereby stimulate improvements. The vehicle set up to deliver this was called *The Software Reliability and Metrics Club*, which created a Newsletter and a series of seminars (mostly one day, but some were longer); the inaugural meeting was held in London in October 1984, with over 100 delegates participating. The SRMC operated for just over two decades, but closed down after a total of 68 events – the final seminar was held in November 2005.

So now let’s move on to the late 80s. Programmable electronic systems were by then moving rapidly, maybe too rapidly, into every sector, and the implications for public safety were becoming apparent to many. National awareness and concern led to a formal call – funded by the (then) Department of Trade and Industry (DTI) and the Engineering and Physical Sciences Research Council (EPSRC) – for proposed initiatives that could help to ameliorate the added risks that computers and, especially, their software could generate in embedded systems.

CSR took the view that, with national support, an upgraded version of the Software Reliability club could make a significant contribution in the safety arena. Responding to the call demanded a substantial proposal document; as usual this was completed with frenetic effort as the submission deadline approached. [We cannot forget Joan faxing long supplementary sections of text, prepared by Robin Bloomfield, out to Tom’s hotel reception desk in the USA – yes, by fax, onto continuous-roll, heat-sensitive paper – cutting edge technology!]

After a competitive presentation, a contract was awarded for the formation of a *Safety-Critical Systems Club* (formally awarded to the BCS, on behalf of BCS plus IEE, with CSR to receive all the funding and do all the work). Financial support was tapered over three years, with the Club to meet specific targets and be self-sufficient when support ended.

The very first Safety Club meeting was held in July 1991, as a component of a DTI conference in Manchester. The issues to be addressed by the Club were seen to be a key concern for the conference delegates – 256 attended this launch meeting, requiring it to be switched out of the small room originally planned to the main auditorium. In fact, this remains the Club’s highest attendance count (the next highest were 213 for the first SSS of the 20th century in 2001, and 205 for “Standards in SCS” – a 2-day event held in Cambridge in 1992).



At this point we would like to recall the dedication and commitment of the Safety Club's first "Coordinator": Felix Redmill. From the outset and for 25 years thereafter, the Club benefitted from his knowledge, experience, contacts and single-minded pursuit of the best possible event programmes, presentations and newsletters. Only ill-health now prevents Felix from continuing to intervene in the interest of the Club's objectives. However, we have been very fortunate in subsequently gaining from the new ideas and approaches delivered by his successors – Claire Jones, Chris Dale and the current enthusiast: Mike Parsons (from 2014 onwards). And in August 2016 we gratefully handed over responsibility for managing the Club to Tim Kelly, working with Alex King, at the University of York.

Some facts and figures

By January 1995 our membership database held contact details for around 2,500 members; all were recorded as individuals, but about 100 were included as part of a corporate package with their employers. [The corporate arrangement provided fully paid membership status at a group discount – the reduction in revenue for the Club was offset by the opportunity to renegotiate the group packages annually.] By promoting these group packages we increased the number covered to about 700 over the next few years, and although it then slowly reduced (to around 550), we were able to bring it back to over 700 by 2015. However, the non-corporate individual numbers declined to around 750 over this period (of course, many were now included in the corporate arrangements). A significant minority were non-UK colleagues, initially around 200, rising to 250 and then returning to 200.



Over the period 1991 to summer 2016 the Safety Club held a total of 86 seminars plus 17 tutorials, and the Symposium SSS '16 was the 24th in the series. The level of participation (speakers and delegates) was consistently encouraging, and supportive of Club finances. Our speakers rarely needed travel support and the average attendance count over the 127 events was 78.

The figures in the above paragraphs relate to Newcastle's period of responsibility for the Club; membership connections are now well in excess of 4,000; the current grand total of public events held (end of 2021) is 157, and that does not include the very many, rather more focused, Club working group meetings.

Some lessons learned

Of course, anyone involved in an activity that goes on for 25 years ought to gain something in understanding and experience, and – ideally – improve in capability. We are confident this applies in our case, given the number of occasions on which we needed to follow the swan's example: furiously paddling out of sight while trying to look serene on the surface. The following list tries to indicate some of the areas where we hope that we improved over time, though we quite often may have failed to look serene.



Event planning: appreciating the scope and scale of what needs doing, including comparing venue options (room capacity, facilities, location, availability, flexibility, cost), selecting, negotiating the rate, and finally booking (we learnt to just ignore the minutiae of hotel contracts, just like agreeing to software conditions of use, life's too short).

Event arrangements: paying close attention to details, including specifying room layout, catering requirements, tell the venue at least three times what the schedule is (with a hard copy on arrival – even then it will, occasionally, be ignored).

Event operation: crucially, of course, take the bookings and process the payments, but also organise badging, delegate listing and any other hand-out materials, monitor no-shows, last minute bookings, and unexpected arrivals. SSS is rather more demanding, with delegate bags to be filled with a considerable variety of enclosures (and not all bags are the same), plus providing assistance to our much-appreciated exhibitors.

Event venue costs: keeping these as low as possible by juggling the numbers. Very early on we decided that the best option was to pay on a per capita basis (hotel jargon is DDR – day delegate rate). But then the venue insists on a “minimum guaranteed number”. So the aim is to achieve the smallest commitment for as large a room as might be needed, based on our own best attendance estimate. We used a sophisticated prediction method [Felix, Joan and Tom each made a (informed) guess, and we took the average]. Specific strategies were developed for SSS to cover (i) numbers at the banquet and (ii) bedroom accommodation – note that it would be sub-optimal to simply use the booking information supplied by our delegates; our aim was to have a place for everyone who actually turns up, but not to pay for any extras whatsoever – tricky! It's worth acknowledging that the Royal Marriott in Bristol gave us excellent support with this, but that elsewhere we sometimes struggled.

Event location: accepting national and logistic realities. In the early years of the Club it seemed appropriate to offer a wide spread of geographical locations, but we slowly recognised that London is indeed the centre of the UK. [An event we organized in Scotland attracted 50 delegates, but the vast majority were from England and they grumbled (a little).] Initially though, we avoided central London's inflated charges by selecting towns just outside the capital (e.g. St Albans or Woking). Delegates made it clear that this just made their travel more arduous, adding a suburban journey after they had reached London. And so, the Club's one-day events are now focused on London's city centre.

Club finances: identifying what really mattered. We realized that although pruning and optimising our costs was, of course, worth doing, the key concern in maintaining a break-even financial trajectory was income. Costs were predictable, but income was not. The previous section indicates how we sought to stabilize direct membership support by means of corporate package deals; we greatly appreciate the contribution of so many colleagues in industry who helped this to succeed. Income from one-day events barely covers their cost, so we focused on SSS. As a much larger event, running over three days, margins are more easily covered, and we developed the exhibition element as a very helpful income supplement. Our exhibitors, and especially the regular participants, deserve a vote of thanks for their ongoing support.

SSS evolution: the Club's flagship event. The annual symposium has always been a 3-day event, but the initial format was a tutorial day followed by two days of invited presentations (delegates could choose to attend either, or come to both). In 2012 the format changed to three days of presentations; in 2013 an even more significant change was made by selecting most of the presentations based on submitted abstracts. Adding an exhibition element was a further, highly beneficial, development – and not merely the financial support already mentioned. The exhibition reinforces the industrial focus of SSS and provides the ideal combination of mutual relevance: the services and products are directly relevant to most of the delegates, and most delegates are thus potential customers.



And lastly, we learned that after four intensive days (and evenings) at SSS, we were always somewhat drained (technical term: “knackered”), but found that a wee drink in the bar acts as a restorative – every time!

Some clear successes

Well, perhaps the most basic indicator of success of an organisation is survival. We thoroughly enjoyed looking after the Club until its Silver Jubilee in 2016, and are delighted to be anticipating the Pearl Anniversary of SSS in 2022.

Our personal perspective is necessarily subjective, but here is a summary nevertheless. The operational ethos has always been somewhat artisanal, associated with (but not a part of) the establishment, volunteer led and aided by largely volunteer effort – but always striving for a professional delivery of services and activities. We wanted to achieve truly face-to-face events offering genuine “networking opportunities”; a real meeting-up of like-minded safety personnel, thereby cultivating and building an interconnected “joined-up” community. And to be very welcoming, especially to new and younger colleagues (note the Club's current Safety Futures Initiative [3] to reinforce this) since clearly that is valuable to old hands and new faces alike. The characteristic manifestation of this was consistently demonstrated during the coffee and lunch breaks, which were invariably accompanied by a real (and therefore noisy) buzz of interaction. All in all, the fostering of a **club** of safety professionals that has now lasted for 30 years, keeping people in touch (pre-dating social media!).



The Club newsletter Safety Systems should certainly be mentioned here; indeed, the newsletter deserves far more than just a mention – so instead we refer you to the volume of selected articles “30 Years of Safer Systems [4]” (and the earlier edition “25 at 25” [5]) and also to the extensive repository of past articles available at the SCSC website (<https://scsc.uk/Newsletter>). The Club website has, in recent years, become a major repository for Club information, the primary vehicle for publicising events and activities, and an effective infrastructure for event bookings and membership registration. We gratefully acknowledge that this has only been possible thanks to the sustained efforts of the Club's webmaster, Brian Jepson, shown here seeking further inspiration, with dedication, through libation.



With some risk of hubris, we can surely include SSS in this section. The annual Club symposium is now a standard entry in early February in many calendars. It should be acknowledged that the fundamental contribution of the Symposium comes from the presentations and their recording in a published volume each year. A huge appreciation of the massive effort contributed in this way, by so very many individuals down the years, is entirely appropriate here.

The Symposium has also delivered an essential element of ongoing financial support for the Club's continued existence, via two mechanisms: directly, from the registration fees paid by delegates, and supportively, through the contributions made by our exhibitors. To enhance the experience of delegates and exhibitors, and to maximize footfall at the stands, we augmented conviviality by providing carefully selected fine beverages on each stand, adhering to a theme (that's right, initially malt whiskeys, but subsequently beers and then ciders – and always the finest examples that we could identify using our networks of expert contacts); this innovation certainly seemed to go down well.



A further element of cordiality is offered each year at the Symposium "banquet", which always aims to offer good food, good wine, and good company. And also a little erudition: words of wisdom from an after-dinner speaker. We won't mention any names, but a soaring speech from an Air Marshal, and the verdict of a High Court judge (he's now a Justice of Appeal!) have featured. [The standard may have slipped a bit for 2022!]

Some problems encountered

You might naïvely think that with practice and experience and careful planning: what could possibly go wrong? Well, of course you wouldn't think that.

Although SSS gave us the most satisfaction, it also generated the most problems. And the one that occurred most often, and caused the biggest headaches: conference materials missing at the venue. We learnt that the best tactic for essential event materials (badging, programmes and delegate lists) was to carry them with us. [We learnt this the hard way, by having to create hand-made badges the evening before an event, handing them out to delegates with string for a lanyard. Not quite meeting our professional aspirations.]

Specific examples, of lost items, arose at the Belfry when the SSS proceedings were not delivered (we had to mail them out afterwards) and at the Brighton Metropole when all of our couriered boxes were handed over to the organisers of the preceding event, and carefully locked away in a "secret" cupboard. These were found only after following up with the courier company, then the courier driver, and then eventually contacting the organisers of the weekend event. Nightmare!

With disappointing regularity, and at various hotels, packages that we had very carefully labelled and shipped, and that had been delivered successfully, entailed lengthy searches by concierge staff before eventually being handed over.

As mentioned earlier, hotel bedrooms for a residential conference have to be guaranteed by us. The last thing we wanted was to have to pay for rooms that were not actually needed, and so – occasionally – we would be short by one or two bedrooms. A discrete request to a friendly and helpful delegate to stay nearby provided a simple solution. However, we recall two occasions when we were holding rather a lot of rooms less than needed. The first time this happened was when we were at the Belfry at the same time as Birmingham’s Spring Fair (the hotel became fully booked and would not expand our allocation). We asked a dozen delegates to relocate to the very attractive New Hall hotel nearby, laid on transport, and covered the bar bills. Sorted. And just once, at SSS ’01, the Royal Marriott could not help out, and we were six bedrooms short. We were very grateful to the RAF delegate contingent who agreed to stay as a group at the Bristol du Vin. (We knew better than to offer to pay for that bar bill!)

So, as you may have realised, our goal was to conceal any organizational problems from most, if not all, of our delegates. But here’s one where that was just not possible. It was day 2 of SSS ’02 at Grand Harbour, Southampton. Our presenter was just getting into his stride when the P/A system burst forth (very loudly) with music and announcements from a keep fit session elsewhere in the hotel, due to a misguided sharing of radio frequencies. Only a frantic search for a technician could fix that one.

Attending well over 100 Club events requires rather a lot of travelling – so some travel problems were inevitable. Here are a few anecdotes.

At the Belfry one organiser’s back gave out (yes, it was Tom). He left the hotel by being wheeled out to the car park sitting on a chair mounted on a hotel porter’s luggage trolley. Fortunately, there were very few spectators!

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A Club seminar on formal methods in Peterborough (March 1987) had a splendid booking level of 126 delegates; the meeting room overflowed into the corridor! All in all, a good day. Since the venue was located directly across the street from the railway station, there was time after the event closed for swift refreshment in the bar before hurrying across to catch the train at 1800. But, oh dear – a major delay and the train was now due at 1850. Clearly the only acceptable option was to go for another pint and then back to the platform at 1845, where the rear lights of the departing train were still just visible, receding in the distance. The next one was due at 1930 so we stayed in the station. It eventually arrived just before 2000, and then was delayed again at York. We finally reached Newcastle at 2305, long before ‘delay repay’ was introduced.

In 2010, the Club (and CSR) operated the large Environmental and Safety Assurance Symposium event for MOD at Abbeywood, Bristol. That was the year that an eruption of the Eyjafjallajökull volcano in Iceland sent clouds of ash and dust into the atmosphere; the main impact on aviation was in April, but a second wave (as we now call them) in May meant our return flight was cancelled. We switched to a direct train to Newcastle from Bristol Parkway. It was rammed; Joan stood until Derby; no seat for Tom until Leeds.



However, our worst returning "rail" journey was caused by a closure of the East Coast Main Line between York and Darlington. Passengers waited in huge queues at York while coaches were, ever so slowly, brought in to transfer us all north to Bank Top station. Joan was frozen (stiff, then solid, she said); indeed she still complains about it now. Quote: *"I said we should have gone for a ***** taxi!"*

We were once trapped in London for an extra night. Very heavy unanticipated snowfall meant no trains or flights were operating at all. We only realised this rather late in the day and most hotels were, by then, full. Joan rang the massive Forum hotel (since renamed), and we managed to book two of the last five rooms.



A major snowfall in February 2009 had us worried about SSS that year, in Brighton. The conference team were at Newcastle airport ready to fly to Gatwick, with bags checked, when serious delays were announced. We were about to try to retrieve our luggage to see if we could head south by rail instead, when a late take-off was promised. At Gatwick, the only trains available were the ones we needed – trapped on the section south to Brighton. On arriving at Brighton station there were no taxis (because all of the local buses had stopped operating due to some snow on the roads). However, after waiting 45 minutes, a brave taxi driver picked us up. Given the problems we had had, and with bad weather continuing, we were seriously concerned about the risk of a low attendance. In fact, there were only about five no-shows. A special commendation is due to the tutorial presenter that year, Nancy Leveson. She had flown from the USA into Heathrow on the Monday, and just kept taking trains that gradually got her nearer to Brighton. By a very circuitous routing she eventually arrived at the hotel around 11pm. Indeed, we concluded that the only people who don't (eventually) get to SSS are those who don't set off.

So, let's end this on a positive note. We've massively enjoyed supporting the Club, and anyone who travels can recount the difficulties that sometimes arise. And although we may often have stayed in rather ordinary hotel accommodations, there have been splendid occasions too. One of these was when Joan was allocated the Presidential suite at the Belfry (probably the best room she's ever stayed in). And to add to the joy, we overheard a very wealthy gentleman from overseas complaining at reception because he could not just walk in and get a room: *"I'll pay for the Presidential suite" "I'm afraid it's occupied, sir"*.

But best of all, when we held SSS at The Grand at Brighton, your authors were allocated (at no extra cost!) almost the entire first floor frontage of the hotel (the Thatcher suite, we called it). The layout was: huge bedroom, huge lounge, small dining room, huge lounge, huge bedroom. Although the dining room was not included, we hired it personally for the night before the conference, opened up all five rooms (just to show them off) and hosted a private dinner for eight. A most memorable evening.



Ah well, go on then, just one more problem scenario. The organisers arrived at the SSS venue hotel on the Monday, at around 11.00, only to be told by reception that no bedrooms had been reserved for us, nor for any of our residential delegates. Just picture Joan's reaction. Speculate about what she said. Rather a memorable morning, actually.

References

- [1] Safety Systems, Volume 25, Number 3, May 2016, Felix Redmill, <https://scsc.uk/scsc-144>
- [2] The Alvey Programme, <https://en.wikipedia.org/wiki/Alvey>, accessed January 2022
- [3] The Safety Futures Initiative, Zoe Garstang, <https://scsc.uk/qf>
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- [5] 25 at 25: A selection of articles from twenty-five years of the SCSC Newsletter Safety Systems, Mike Parsons, Graham Joliffe, Tim Kelly (Eds), <https://www.amazon.co.uk/25-selection-articles-twenty-five-Newsletter/dp/154089648X/>, January 2017.

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Tom Anderson and Joan Atkinson

From 1991 to 2016 Tom Anderson directed the SCSC within the auspices of Newcastle University, where he was Professor of Computing Science. His research interests addressed fault tolerance and, more broadly, dependable systems (encompassing safety and security). In 1984 he established the Newcastle branch of the Centre for Software Reliability, which provided a supportive environment to a series of research projects, and also organised over 250 external conferences and seminars – all with a strong industrial orientation. From 1992-97 he was Head of Computing Science; 1998-2002 Dean of Science; 2008-2012 SAgE Dean of Business Development. Tom retired in 2016, but continues to be active in the SCSC Steering Group and maintains engagement in outreach via CSR Events. Thanks to Covid restrictions he has designed and scratch built a rather splendid garden shed.



Joan Atkinson joined Tom at CSR, Newcastle University in 1985 where she became the research centre's Administrative Coordinator which, as well as support for the centre's academics and their research, involved full responsibility for the administration of the SCSC. The events referred to in the previous paragraph were, of course, all organised by Joan – in fact there were 256 events altogether, total duration 422 days, with an average daily attendance of 86 (equivalent to looking after 100 people for a year). She too retired in 2016, and now does the work of CSR Events as a self-employed PCO (professional conference organiser). Despite Covid restrictions, as Chair of the Washington Village in Bloom group, she led them to victory in the Northumbria in Bloom competition (best overall entry) and was awarded a trophy cup only slightly shorter than herself.

