



INSIDE THIS ISSUE

<i>Chairman's Address</i> 2	<i>Next SCAF Event – Vendor & Service Provider Day</i> 2	<i>The Cost of Ships-the influence of size and time</i>5
<i>Letter from the Editor</i> 8	<i>SCAF 2013 Annual Conference</i> ... 9	<i>SCAF Annual General Meeting</i> 11
<i>The Value of Capability</i> 12	<i>Call for Papers, Joint International Meeting, France</i> 14	<i>Future Events & Contact Details</i> 15

CHAIRMAN'S ADDRESS



The Society had a great annual conference and AGM this year in September and I would like to thank the committee for 2012/13 for their

support and help for my first year as Chairman, they have made it very easy for me. I would like to welcome the new SCAF Committee and reiterative my proposition at the AGM that volunteers to come onto the committee are always welcome.

At our first committee meeting this year we finalised our thoughts on the new SCAF awards that we are proposing to present at an awards evening to replace our summer reception. We have had a P G Pugh award for the most thought providing and innovative presentation for a few years and want to add to this to promote our society. So the SCAF committee will have an awards sub-committee that will judge all of the presentations given in one year in the following categories:

- **P G Pugh award** – for the most thought provoking and innovative paper
- **Best style and quality presentation** – for presentations at our workshops
- **Best technical presentation** – for sharing depth of knowledge at our workshops and seminars



In addition to this we will present an award to the presentation that is marked highest by our members. At each workshop you have the opportunity to mark the presentations, this will be the

metric used for the **best presentation voted for by members.**

Arthur Griffiths has again volunteered to be editor and chief of the SCAF newsletter and to promote the newsletter and generate articles we will be giving an award for the **best SCAF news letter article** as judged by the editor and chief. Finally, we wanted to recognise the efforts of members who provide consistent and long service to the society, so we will award the **SCAF service award.**

This might seem like an explosion of awards after not giving anything for years and we are keen to maintain the quality of our workshops. So there is no guarantee that all the awards will be presented each year, if we don't think that there is a genuine contender then we will simply not make the award.

I hope you feel inspired to put pen to paper or clipart on a slide and contribute to the programme and newsletter for this and many years to come. The society is only as good as the contributions that we receive.

Our next event is a "Vendor and Service Provider Day" to be held on 19th November. This event is FREE to attend and will provide attendees with an opportunity to hear from experts and see demonstrations of current costing related models and techniques. There is a full presentation programme – but please register to help with the administration.

Inside this newsletter there are details of our future events for 2013/14, together with articles submitted by our members. Copies of the presentations given at our Annual Conference are now available to download from the SCAF website (www.scaf.org.uk).

Dale Shermon

SCAF Chairman

Next SCAF Event

“Vendor and Service Provider Day”

Tuesday 19th November 2013

The BAWA Centre
Filton, Bristol

The Society has been successfully organising themed workshops and conferences to discuss, disseminate and promote cost analysis and forecasting together with related topics since 1984.

In arranging the programme for 2013, it was suggested that we should organise a “Vendor Day” where the use and demonstration of cost estimating and forecasting, project control, risk management tools and services could be promoted to the interest of all members and attendees.

In many of our seminars and workshops we discuss the applicability of acquisition and logistic tools to help the cost estimating process without actually demonstrating the tools themselves. SCAF is therefore delighted to announce a **Vendor and Service Provider Day** where attendees will have the unique opportunity to see current innovations in the field of cost modelling, and hear the lessons learned from experienced practitioners and analysts in the field of cost analysis and forecasting.

This **FREE** event is supported by all the major cost estimating tool vendors and service providers and tangible benefits to the attendees include:

- Exposure to current costing and cost related products and services on offer
- Opportunity for one-to-one discussion during breakout sessions
- Group discussion during plenary sessions
- Hear case study demonstrations on lessons learned and benefits
- Network with other experienced cost analysts and other members of the costing community
- **FREE** buffet and refreshments.

Participating organisations include:



Vendor and Service Provider Day Programme

Concorde Room	Morning Session	Concorde Room	Afternoon Session
09.30-10.00	Price Systems - "Use of parametrics in portfolios" presented by Andy Nicholls	13.30-14.00	Arke Ltd - "Open Systems Architectures – the Value for money choice?" presented by Andy Mills and Paul Jones
10.00-10.30	TFD Europe Ltd - "Spares Investment Cost Modelling in the Real (non steady state) World" presented by John Sharp	14.00-14.30	Cranfield University - "Cost of Lng-Term Digital Preservation" presented by Essam Shehab and Zaira Ortis
10.30-11.00	Presentation and demonstration by Galorath International	14.30-15.00	Polaris Ltd - "UK Energy and Critical Materials: Cost and Vulnerability" presented by David Bangert
11.00-11.30	Presentation by Decision Analysis Services (DAS) Ltd	15.00-15.30	riskHive - "Delivering Quantified Benefits through Risk Management" presented by Emma Price
11.30-12.00	ACostE/TASC - "Accreditation and Development in Project Controls" presented by Richard Plumb	15.30-16.00	Presentation by QinetiQ - "Acquisition Services - an end-to-end capability" by Dale Shermon
12.00-12.30		16.30-17.00	Presentation and Demonstration by 4Cost GmbH
Ballroom	Morning Session	Ballroom	Afternoon Session
09.30-10.00	Arke Ltd - "Open Systems Architectures – the Value for money choice?" presented by Andy Mills and Paul Jones	13.30-14.00	Price Systems - "Cost Estimation Frame Project: Innovative Solutions to Estimate the Program Cost" presented by Mr Andre Roussel
10.00-10.30	Cranfield University - "Cost Model Development at Cranfield University" presented by Dr Paul Baguley	14.00-14.30	TFD Europe Ltd - "Spares Investment Cost Modelling in the Real (non steady state) World" presented by John Sharp
10.30-11.00	Polaris Ltd - "UK Energy and Critical Materials: Cost and Vulnerability" presented by David Bangert	14.30-15.00	Presentation and demonstration by Galorath International
11.00-11.30	riskHive - "Delivering Quantified Benefits through Risk Management" presented by Emma Price	15.00-15.30	Presentation by Decision Analysis Services (DAS) Ltd
11.30-12.00	Presentation by QinetiQ - "Acquisition Services - an end-to-end capability" by Dale Shermon	15.30-16.00	ACostE/TASC - "Accreditation and Development in Project Controls" Richard Plumb
12.00-12.30	Case Study Presentation on DLR "Spaceliner" project by 4Cost GmbH	16.30-17.00	

Registration and Costs

This Exhibition and Presentation/Demonstration Programme is FREE to attend. SCAF requests that all attendees pre-register to help with the administration. Registration and coffee will be available from 09.00.

To register or obtain further information please contact the Society's Secretary, Mr Neil Morrill on 02392-537-271, ndmorrill@dstl.gov.uk,

The Cost of Ships – The Influence of Size and Time

By Brian Tanner, Independent Cost Analyst

In the early 1990s the Ministry of Defence Director General Ships needed to identify the budget for some new survey ships. Cost records for previous vessels were not held so recourse was made to the pre-internet public domain, i.e. industry publications. It was found that prices were published when an order was announced while typically two years later an article appeared describing the vessel on the occasion of its sea trials or delivery. The article usually contained the top level ship characteristics. Liaison with the then Department of Trade and Industry Shipbuilding Task Force provided the actual prices for the vessels; these did not vary significantly from the published prices.

The vessels for which data was collected were ordered for: Scottish Fisheries Protection Agency; DEFRA, Trinity House, NERC and Northern Lighthouse Board. The application of regression techniques using quantitative and qualitative factors as listed below allowed a sufficient parametric equation to be identified to forecast the required budget.

- Size = Volume (Gross Tonnage); Mass (Build Weight, Displacement)
- Crew Numbers = Number - measure of outfitting
- Laboratories/ Workshops = Factor ^ 0/1
- Speed > 20 to 22 Knots major cost factor
- Year of Build = Complexity trend

The resultant parametric equation was:

$$Cost = A * GT^{0.567} * Nos^{0.26} * (Labs)^{1.31^{0/1}} * Date^{0.69}$$

Note the GT exponential of 0.567. The end result was the acquisition of the survey ships HMS Echo and HMS Enterprise.

The data set was maintained and updated as it was expected that a third vessel would be required when HMS Roebuck decommissioned. In the event this did not happen.

In more recent times, employment in estimator training led to the survey ship data being further updated with public domain information to provide both examples and training exercises. Trinity House together with the Northern Lights Board had jointly procured from Stocznia Remontowa SA, Gdańsk, Poland the three vessels



THV Galatea:
DP2 Multi Functional Tender

- Length Overall: 84.20 metres
- Breadth Moulded: 16.50 metres
- Design Draught: 4.32 metres
- Gross Tonnage: 3672 tonnes
- Service Speed: 13 knots
- Crew: 18
- Supernumeraries: 22 persons
- Crane Capacity: 30 tonnes

NLV Pharos:
DP2 Multi Functional Tender

- Length Overall: 84.20 metres
- Breadth Moulded: 16.50 metres
- Design Draught: 4.25 metres
- Gross Tonnage: 3569 tonnes
- Service Speed: 12.5 knots
- Crew: 18
- Supernumeraries: 12 persons
- Crane Capacity: 30 tonnes

THV Alert:
DP1 Rapid Intervention Vessel

- Length Overall: 39.30 metres
- Breadth Moulded: 8.00 metres
- Design Draught: 2.50 metres
- Gross Tonnage: 302 tonnes
- Service Speed: 15 knots
- Crew: 6
- Supernumeraries: 4 persons
- Crane Capacity: 48 tonnes / Metre

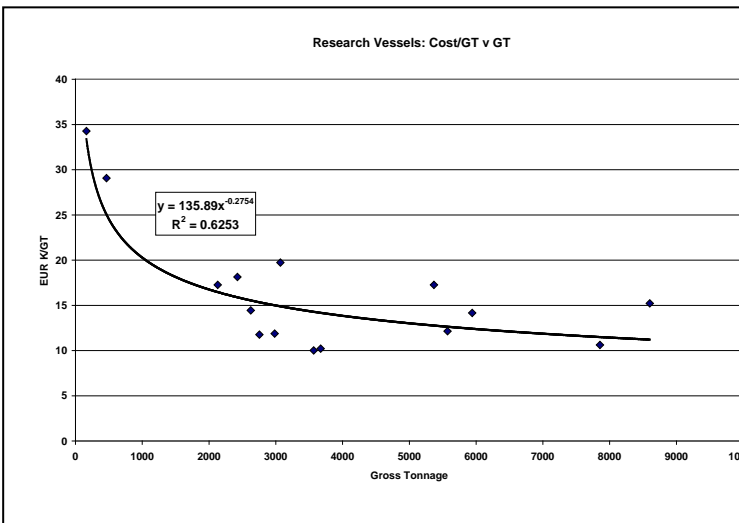
shown here. The total cost was published and a search of Trinity House annual reports produced the individual prices for THV Galatea and THV Alert and hence NLV Pharos.

Students were given the total cost and exchange rate at the time of order together with the data shown here and tasked to estimate the costs for the individual vessels. The model answer is shown in Figure 1.



The nearest estimate for the published costs used Gross Tonnage with a 0.6 exponent. This is an example of Chilton's Law which is based on the observation that the cost of an object is less than proportional to its size. The exponent can range in value between 0.5 and 1, typical values being of the order of 0.6/ 0.7.

A simple example is the cost of a hollow sphere. Presuming the cost is based on the area of metal required to fabricate the sphere then cost can



be shown to be a function of $Vol^{0.67}$. In Figure 1 there is an estimate close to that of gross tonnage with an 0.6 exponential and that is one based on the parameter $L*(B+D)$, that is, the area of the box surrounding the hull, which is another representation of $Vol^{0.67}$.



RRS Discovery delivered by CN.P Freire on 8th July 2013

The survey ship data has been maintained and updated for future use. Using only more recent data an analysis has produced the figure opposite, demonstrating how size influences the specific cost, and again demonstrating the size exponential to be of the order of 0.7. The

degree of scatter is typical for such parametric analysis. One should use Order Date as a second independent variable but this has no marked effect on the exponential. Statistically determined confidence bands are significantly wide due to this scatter and the comparatively small amount of data. One published set¹ of typical accuracies is +100%, -50%, this reducing to +30%, -20% with the inclusion of "appropriate contingency" which others might more clearly describe as risk provision.

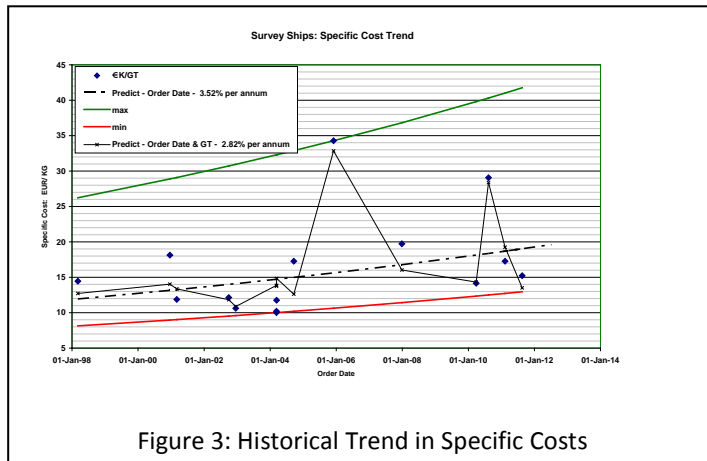
In the defence arena much has been published about the real cost growth of equipments. One lifelong proponent of the need to recognise this influence was Philip Pugh who published the handbook "Defence Equipment Costs" shortly before his death in early 2009. Real cost growth is also evident in other equipments; in the marine arena there are the increasing requirements of the IMO together with increased health and safety requirements and accommodation requirements.

Rule of Thumb exercise

Cost	€ 60 M	€38.0 M	€0.633	Euro
Ship	THV Galatea	HLV Pharos	THV Alert	Total
Length oa: m	84.2	84.2	39.3	207.7
Price	€ 24.3 M	€ 24.3 M	€ 11.4 M	
L*(B+D)	1753.0	1747.2	412.65	3912.844
Price	€ 26.9 M	€ 26.8 M	€ 6.3 M	
L*B*D	6001.8	5904.5	786	12692.301
Price	€ 28.4 M	€ 27.9 M	€ 3.7 M	
Block Coefficient	0.65	0.65	0.45	
L*B'D Modified	3901.2	3837.9	353.7	8092.8
Price	€ 28.9 M	€ 28.5 M	€ 2.6 M	
Gross Tonnage	3672	3569	302	7543
Price	€ 29.2 M	€ 28.4 M	€ 2.4 M	€ 60 M
GT* n' n=0.60	137.7	135.4	30.8	303.9
Price	€ 22.2 M	€ 25.7 M	€ 5.1 M	€ 60.0 M
at 0.623p	€17.2 M	€16.9 M	€3.8 M	€38.0 M
Known Prices	£16.6 M	£17.5 M	£3.8 M	

Figure 1

¹ Association for the Advancement of Cost Engineering (AACE) International Recommended Practice No. 18R-97



The RAND National Defense Research Institute has published reports on cost growth in naval vessels. Applying the same analysis to the survey ship data produces the result shown in Figure 3. Analysing specific cost with only the order date as an independent variable produces the curves shown with significant data scatter. Introducing the Gross Tonnage as a second independent variable reduces the variation around the regression line to +33%, -25%. The large specific costs are for vessels significantly smaller than the rest of the data set and therefore of much higher

specific cost. The real cost growth factors identified by this analysis are indicative of the allowance that must be made when formulating the budgets for future research vessels.

Overall, what has been demonstrated is that the cost of research vessels increases less than linearly in proportional to size while for a given size of vessel the specific cost will experience a real cost growth of the order of 2¼% to 3% per annum.

About the Author

Brian Tanner worked in the UK Ministry of Defence (MoD) from 1962 until his retirement in 2005. He has been involved in ship costing and budgeting since 1990. Since leaving the MoD he worked for BAE Systems Naval Ships from 2005 to 2011. He is now an associate consultant with Decision Analysis Services Ltd and has spent much of 2012 delivering cost forecasting training to MoD's Cost Assurance and Analysis Service (CAAS) staff.

In 2002, Brian Tanner developed Compensated Gross Tonnage Factors for Warships with First Marine International thereby allowing warship building productivity to be measured. He has privately researched costs of certain warships for historical trend analysis purposes with mixed success. Brian holds a Bachelor of Science in Naval Engineering gained from the Royal Naval Engineering College.

“Don't mess with old people”.

A lawyer and a senior citizen are sitting next to each other on a long flight.

The lawyer is thinking that seniors are so dumb that he could put one over on them easily.

So the lawyer asks if the senior would like to play a fun game.

The senior is tired and just wants to take a nap, so he politely declines and tries to catch a few winks.

The lawyer persists, saying that the game is a lot of fun. "I ask you a question and if you don't know the answer, you pay me only \$5.00. Then you ask me one and if I don't know the answer, I will pay you \$500.00", he says.

This catches the senior's attention and to keep the lawyer quiet he agrees to play the game.

The lawyer asks the first question. "What's the distance from the Earth to the Moon"?

The senior doesn't say a word but reaches into his pocket, pulls out a five-dollar bill and hands it to the lawyer.

Now, it's the senior's turn. He asks the lawyer, "What goes up a hill with three legs and come down with four"?

The lawyer uses his laptop to search all references he could find on the Net. He sends E-mails to all the smart friends he knows, all to no avail. After an hour of searching, he finally gives up. He wakes the senior and hands him \$500.00. The senior pockets the \$500.00 and goes back to sleep.

The lawyer is now going nuts not knowing the answer. He wakes the senior up and asks, "Well, so what goes up a hill with three legs and comes down with four"?

The senior reaches into his pocket, hands the lawyer \$5.00 and goes back to sleep. Don't mess with seniors!

Thanks Penny. Ed

Letter from the Editor

By Arthur Griffiths, SCAF Newsletter Editor



Here we are in late October, after the balmiest summer in recent memory, and it's still possible to walk around in shirt sleeves or a light pullover. It's been a strange year – winter carried on well into spring and summer arrived with what seemed like a flick of a switch rather than a gentle easing of the weather climate. This cyclic movement seemed to mirror the patterns in the workplace.

The year started with much discussion on cost certification and, at one stage, questioned whether non-certified practitioners would be allowed to sign off estimates. We reminded people that many of the champions and innovators in cost estimating/forecasting techniques came from a background in engineering, science, economics or mathematics and had no formal qualification in cost estimating per se. Their specialist 'costing and pricing' training had evolved through experience and handed down to the many who undertook modular training on particular facets of costing. This could have been classed as a certification exercise but it was seen as personal development rather than a certificate of qualification. Times have changed and I'm sure this debate will carry on. It is however pleasing to see that estimating is getting more professional recognition and, with that, standards and qualification are required. With this in mind it was disappointing, but not surprising, to hear that the preliminary findings of the National Audit Office report that was presented by Joe Perkins at the conference in September showed that government did not sufficiently recognise the importance strong costing and that while there were some encouraging areas there was sufficient concern to suggest that recurring problems in the planning and delivery of public services would persist.

Unfortunately, this was borne out by announcements from the Cabinet Office that a number of government capital investment programmes had shown significant cost growth and, notably, some before they had even started. We can argue about the causes but in some cases the scope appeared to be unchanged and the excuse seems to be 'refinement of the estimates'. Maybe this is an issue. We are all familiar with working and presenting cost envelope ranges which should capture all the uncertainty and risk but to set a budget (not a target) at an upper band of probable outcomes may be unpalatable to the decision makers.

The Society has again had an excellent year with a series of good workshops covering several of the current cost estimating and forecasting issues. Each workshop has been well attended and it was encouraging to see that the teams participating in this year's estimating challenge comprised many of the younger generation within the costing community. Our thanks go to everyone who took part and to the expert panel members who provided encouraging critique and support to the teams.

In 2014 the Society will celebrate its 30th anniversary and we have arranged an excellent set workshops and events to commemorate the occasion. Our next event is in on 19th November where we are holding a Vendor and Service Provider day and giving all the attendees the opportunity to see and hear experienced practitioners demonstrating current techniques and future developments.

Please forward articles, letters or any other ideas for inclusion in the newsletter to:

Arthur Griffiths
Editor, SCAF Newsletter
Email: editor@scaf.org.uk

SCAF 2013 Annual Conference

“Cost Matters”

17th September 2013

The BAWA Centre, Bristol

Amid the fanfare and video overload our keynote speaker, **Chris Boardman**, Managing Director of Military Air and Information at BAE Systems opened our 29th Annual Conference. A former commercial apprentice who became Head of Estimating and then Managing Director at BAE Systems with responsibilities for 13,000 people and a £3.2Bn turnover was the ideal person to open our annual conference. His presentation related directly to “Cost Matters” (always and even more so now). It was informative (with personal thoughts on parametrics and analysis), entertaining and respectful – with a very clear message that estimating does not get

the recognition it deserves. It was good to hear that within BAE Systems, estimating (which had been previously joined with commercial for personal progression) had now been separated again for professionalism and recognition gained through professional training and certification thus providing an opportunity to grow with experience.

It was always going to be difficult to follow such an enigmatic speaker but **Joe Perkins**, Audit Manager, National Audit Office (NAO) achieved huge interest with his talk on the “The Impact of Costing across Government”. This study by the NAO has reviewed how costing affects: the strategic allocation of resources; project management; delivering services cost-effectively; working with third parties and why problems with costing still persist. It was interesting to note the methods that had been employed by the NAO that included case studies, review of central government guidance and private sector comparison. The provisional findings showed that government did not sufficiently recognise the importance strong costing and that while there were some encouraging areas there was sufficient concern to suggest that recurring problems in the planning and delivery of public services would persist. A really informative presentation demonstrating the cost matters and that costing expertise needs to be championed across government – not just ‘pockets of excellence’.

Dr David Exelby, Managing Consultant, Decision Analysis Services and **Andrew Jones**, Naval Architect, BMT Defence Services Ltd provided a case study on “A Cost-Benefit Analysis of Indicative High Level Concept Designs”. The case study was a recent study conducted on behalf of the New Zealand Defence Force. The presentation showed how diverse skills and experiences, across a portfolio of topics of interest to SCAF members, could be applied successfully to assist in the establishment of realistic expectations for defence capability delivery within a constrained cost budget (the best we can afford). The New Zealand Maritime Projection and Sustainment Capability (MPSC) project is developing options to replace its maritime capability with an appropriate ship. The project is considering a more versatile vessel which could incorporate some supplementary sea lift capacity, including amphibious and aviation capabilities. The approach adopted to undertake the cost benefit analysis was one of Multi- Criteria Decision Analysis that allowed for the overall ordering of options preference choices. Using the EQUITY model the team showed how the aspirational concepts on the cost benefit envelope were well aligned to the value frontier defined by commercial and military pricing positions. It was interesting to see the considerations in trade-offs between solution options where some solutions met objectives of capability and cost better than others and this enabled those solution options to be traded-off through the exercise of military judgement recognising the costing effects.



Sanathanan Rajagopal, Cost Assurance and Analysis Service, Ministry of Defence spoke on the “Cost of Software Obsolescence” and the effects of military software dependence. His presentation took note of software reliability, software complexity and software maintainability. Some of the attendees questioned why the research was being

conducted when a number of software cost estimating tools already had features that addressed the issues of software support. Sanathanan explained situations where: software is not always supported; cannot be updated and the effect from changes in hardware. He then went on to discuss the three principle causes of obsolescence: Functional, Technological and Logistical. The aim of his research (being conducted in conjunction with Cranfield University is to develop a model to estimate the cost of Software Obsolescence at very early stages of the project by identifying the likely cost drivers. The study will include aspects of complex software engineering issues such as systems of systems integration, software maintenance along with risk and uncertainty analysis. SCAF fully supports the research study and will provide Sanathanan with the opportunity to present the findings at future workshops.

Alex Davis, Deputy Chair of the PMC Special Interest Group, Association of Project Management (APM) took us away from cost estimating for a while and introduced us to project management controls with a paper entitled “we need the facts ma’am just the facts”. Although a serious topic it was presented in a very enthusiastic manner by someone who was obviously vastly experienced in the subject matter. Alex took us through the key points for project success and brought in a bit of the real world when speaking about what happens when we don’t have all the facts (a situation that we are all too familiar with). The measure of project success was not just time, cost and performance but more about the realisation of benefits be it financial or social. There were a few murmurs when he spoke about the question about integrity and how it influences outcomes – but the message was clear choosing truth over popularity. Alex spoke about the use of Earned Value Management within the project management sphere and how cost, risk and progress was and should be measured. The PMC SIG is the most productive of the 13 SIG’s within the APM and it’s not surprising with such enthusiastic volunteers.

Over the years we have had several discussions on the Force Structures Cost Model developed by the Defence Science and Technology Laboratory (Dstl). However, this presentation by **Dr Stuart Taylor**, Dstl showed how the model was being used to assess the affordability of any future force structure. He explained how defence policy and capability choices will drive the force structure requirement and thus determine the affordability of various options. It was noted that the tool was developed in 1999 and fully functional by 2002 was continually updated and is currently being used to develop the tools and techniques to support the Defence Review in 2015. Stuart demonstrated the use and applicability of the tool particularly in the area of the support of force structure Balance of Investment studies and how the enhancements to support future studies have been identified. All work on this programme was now in progress with further work and validation to be completed in preparation for SDSR 15.

Our final speaker of the day was **Andy Nicholls**, Price Systems who spoke on “Portfolio Management – a parametric approach”. Andy first set the scene by stating what was meant by ‘portfolio’ in defence terms and how this related to the Defence Capability Plan (DCP). He also explained the omissions in the publicly available DCP that have to be considered in any cost analysis studies. The presentation was based on a case study that was a compiled portfolio of the top 25 programmes, ranging over the period 2013 to beyond 2030 and representing a budgetary value of some \$57Bn. There has always been an issue with predicting future defence budgets and any tool must have the ability to measure and assess capability within budget constraints. Andy’s use of the True Planning tool demonstrated that ability and went further in its ability to provide comparisons, schedules and probability based risk.

We would like to thank all the speakers for making this an excellent conference. Copies of all the presentations are available for download from the Society website www.scaf.org.uk

Ed

SCAF Annual General Meeting

Tuesday 17th September 2013

Bristol

The Society Annual General Meeting was held in conjunction with the Annual Conference. The Chairman, Dale Shermom called the meeting to order and outlined the agenda. In his address he discussed what the Society had achieved in the past year and what the plans were for the future. During the year the Society had organised the Annual Conference, 4 themed workshops and a summer reception. These included:

- September 2012 - Annual Conference, "Forecasting for Success", The BAWA Centre, Bristol
- November 2012 - Learning from Experience – interactive and practical, The BAWA Centre, Bristol
- February 2013 - "Economics and Forecasting", Royal Institution of Naval Architects, London
- April 2013 - "The SCAF 2013 Cost Estimating Challenge", The BAWA Centre, Bristol
- June 2013 - "Quantitative Cost and Risk Analysis", Ashton & Lea Golf Club, Preston
- July 2013 - Summer Reception, Bath

Each event had been well attended although the average attendance was slightly lower than last year. The feedback notes from the attending delegates were very complimentary and supportive demonstrating the value to the costing community from the workshops.

The Chair thanked the committee for their support throughout the year. The committee elections for the forthcoming year were held in May and, as the numbers of nominees were fewer than the spaces available, all the nominees were duly elected to the committee for 2013/14. From L-R Dr Paul Baguley; Cranfield University, Dale Shermom, QinetiQ (Chairman); Arthur Griffiths, (Newsletter Editor); Neil Morrill, DSTL (Secretary); Andy Nicholls, PRICE Systems and Dave Hedley, BMT Reliability Consultants (Treasurer). Missing from the photograph is Mrs Karen Sparks, Technical Director, Atkins; Paul Moseley, CAAS, Ministry of Defence and Dr Paul Wood, BMT Hi-Q Sigma.



The Chair noted that the Society's operating and deposit accounts were in good standing and that Dr Mark Gilmour and Paul Duvall had volunteered to provide an independent review of the accounts. A Copy of the full AGM presentation is available to download from the SCAF website.

The Value of Capability: Links between military capability, strategic national objectives and non-market goods.

Ian Corder

Abstract

This article builds on the work of Anagboso & Spence (2008) and reviews the associated literature to argue that military capability and activities are of value because they improve the odds of achieving certain strategic objectives. Such objectives are worthwhile pursuing because they represent non-market attempts to capture valuable outcomes for the public's benefit, such as stability and security. The article presents why and how governments and decision-makers in defence procurement, particularly in the United Kingdom, should seek to value the non-market benefits of their decisions under such a conceptual framework.

Introduction

"The saga of the terrible waste of public money on the Carrier Strike project continues. This report shows that a further £74 million at least has been thrown away on top of the billions of pounds of notes already torn up."

The Rt Hon Margaret Hodge MP, commenting on the National Audit Office report 'Carrier Strike: the 2012 Reversion Decision'.

As illustrated in the quotation above, defence procurement decisions can be costly and controversial. They are also rarely open to significant public scrutiny – indeed, the National Audit Office was initially denied access to briefing papers by the National Security Secretariat, restricting its assessment of the overall Carrier Strike project. Yet there is clearly an opportunity cost associated with a nation's consumption of defence, as such services must be procured and consumed in preference to units of other services such as education and healthcare. The electorate have taken a less-than-enthusiastic stance on defence's importance relative to these services, as Edmunds (2010) notes.

"Opinion poll data since 2006 have consistently shown that while a large proportion of respondents (46 per cent in 2008) might be willing to spend more on defence, a significantly higher proportion (58 per cent) do not want to spend less on other public services—such as health and education—in order to do so, nor indeed do they want to pay more in tax (53 per cent)"

So when a quantity of money is committed to defence spending, how can the taxpayer be assured that this money is not better spent building schools and hospitals unless the benefits of such investments are comparable? Anagboso (2008) recognises that in measuring defence outputs, "It is not easy to define a 'unit of security' or a 'unit of peace and stability'." Yet significant expenditure is committed to defence on the premise that improved security will be the result, and that (presumably) the value of the security benefit generated will exceed the cost of acquisition. How can such cost-benefit analysis be possible without understanding the value that the operator, and the public more widely, derives from a particular piece of military capability that may be procured?

It is an assumption of this analysis that national defence benefits, such as national stability and security, are generally non-market goods. They are also to some extent public and positional goods (their utility depends on others' consumption). In order to assess whether defence expenditure should be incurred, whether on its own merits or in preference to other public services, we must assess each project's Value for Money (VFM). This means deciding what benefits defence gives us, and what they are worth to us – preferably in monetary terms. Valuation of such non-market benefits for the purpose of cost-benefit analysis is complex. Admiral Chris Barrie, addressing the Committee for Economic Development in Australia (CEDA) asked:

"How do we put some meaningful value on defence of our way of life, the value of deterrence to protect our interests, the defence of our economic zones, being good international citizens or the maintenance of alliance networks?"

A number of other commentators have also asked this question – it was again posed specifically in the national defence context by Cornish et al (2009) and Lindop. The problem of valuing non-market goods does not have an obvious solution. However, the importance of making such an assessment is affirmed in the Treasury Green Book, which states "The valuation of non-market impacts is a challenging but essential element of... [the net value of a policy or project] and should be attempted wherever feasible" (p61). Atkinson made similar statements in his 2005 Output and Productivity Review.

Anagboso et al's work (2008, 2009) considered a number of approaches, and provided a useful conceptual framework for defence professionals considering the problem. This framework was presented by means of a diagram which visualises the

steps between the procurement of assets (the 'Inputs') and the delivery of non-market benefits such as security (the 'Outcomes'). It can be seen that there are a number of different levels at which measurement or valuation may be attempted.

Cornish (2009) is clear that it is the 'Objectives' level which should be primarily focussed on in valuation, stating:

"The problem with much commentary so far has been the focus on inputs (or means; i.e. particular weapons systems) rather than on outputs (or ends, i.e. the effects defence policy is trying to achieve)... the defence debate is about using the armed forces to achieve value in the form of specified political purposes"

From this standpoint, a way of approaching the valuation of a military asset might be to assess the extent to which the marginal asset ensures the attainment of a nation's strategic military Objectives. However, achievement of these Objectives is arguably only valuable due the implied increase in stability, security or other benefits. From the viewpoint that the defence sector acts as a value chain delivering security to the end consumer (the taxpayer), valuation can only legitimately be undertaken at the Outcome level. As Coyle (1996) notes, "value must be viewed from the customer's perspective, because it is value to the customer that is most important."

About the Author

Ian Corder is the Life Cycle Cost Lead at Rolls Royce. He has an academic background in Finance, Law and Real Estate. Ian specialises in business and investment modelling, organisational strategy and business improvement.

The summary provided above is part of a more detailed paper published by Ian Corder. A copy of the full paper can be requested by contacting the author by email on: ian.corder@cantab.net

Cost-Benefit Analysis and Multi Criteria Analysis: competing or complimentary approaches?

- Both are frameworks for assessing options facing decision makers
- Both try to construct a common metric for competing options
- Both are sensitive to assumptions; but different assumptions!
- Both have their merits and failures
- Are they aids to decision making or a way of decision making?

AND THE CONCLUSIONS ?

- MCA can be seen as subsuming a CBA; CBA is one criterion for assessing options
- MCA can define a narrow set of options then subjected to CBA
- MCA can sit alongside CBA: one handles measurable costs and benefits, the other handles qualitative costs and benefits; an approach of many government guidelines
- MCA inferior to the 'objective' CBA approach

Welcome any other thoughts ?

CALL FOR PAPERS
Joint International Meeting SSCAG/SCAF/EACE
Toulouse, France

These are the instructions to all authors requesting to present a paper at the
July 1-2, 2014 Joint International Meeting of SSCAG/SCAF/EACEWG at the
Centre National d'Etudes Spatiales, Toulouse, France

You are invited to present an abstract on one of the following topics:

1. Cost Models
2. Cost/Schedule Technical Data Collection or Histories
3. Preliminary Design Centers
4. Schedule Models and Historical Data
5. Policies: e.g., Cost & Schedule Reserves, Technical Margins, Fixed Price vs. Cost Plus, Insight vs. Oversight, etc.
6. Reality Check: Estimates vs. Actuals – What Happened and Why
7. Risks; Identification and Management – Translating risks to budget requirements

In addition, attendees are also encouraged to submit potential topics for roundtable/panel discussions for consideration by the organizers.

The abstract will be a text not more than 500 words that will identify:

- The title of the paper
- The name of the author(s)
- A brief description of the paper subject

The biography(ies) of the author(s) with a short text (no more than 300 words per biography) should be joined to the abstract. Also please list a point of contact for questions on proposed papers: Name/Tel:/Email:

All abstracts submissions are to be submitted online **TO ALL 3** organizations by using these email addresses.

dpine2@cox.net ArthurGriffiths@das-ltd.co.uk herve.joumier@esa.int

Schedule: The abstracts and biographies shall be submitted not later than:

15th of April 2014 -- so that submitters may be notified by May 15th.

All questions related to the online submissions of abstracts and biographies should be directed to lead for your cost estimating organization or if not a member of any of the three organizations, submit your questions to David Pine of SSCAG.

This will be our seventh joint meeting, and with your enthusiastic participation I'm sure it will be as successful as the previous six.

David Pine – SSCAG

Arthur Griffiths – SCAF

Herve Joumier–EACEWG

Space Systems Cost Analysis Group Society for Cost Analysis & Forecasting European Aerospace Cost Engineering Working Group

Future Events

SCAF Workshops and Seminars for 2013/14

- 19 Nov 2013** “Vendor and Provider Day”, BAWA Centre, Filton Bristol. Consultants and Tool Vendors will be showcasing their products and services to an open forum event organised by SCAF. This is the only event in the UK that provides this opportunity to share knowledge and promote business.
- 04 Feb 2014** “Affordability, Value for Money & Decision Making”, Royal Institution of Naval Architects (New Offices), Northumberland Road, London. **Papers Invited**
- 01 Apr 2014** “Practical Examples of Cost Estimating and Analysis - The 2014 SCAF Cost Estimating Challenge and Training Workshop”, BAWA Centre, Filton, Bristol. **Teams Invited**
- 03 Jun 2014** “Value Engineering”, Preston, Lancashire (venue to be confirmed). **Papers Invited**
- 08 July 2014** SCAF Summer Reception and Awards Banquet, (date and venue to be confirmed)
- 16 Sep 2014** SCAF Annual Conference, “Benefits of Cost Engineering”, BAWA Centre, Filton, Bristol

Other Related Events

- 1-2 July 2014** Joint SSCAG/EACE/SCAF workshop, Centre National d’Etudes Spatiales (CNES), Toulouse, France. It is intended that this event will coincide with the 2014 Toulouse Space Show. **Papers Invited**
- 2014** ICEAA Annual Conference, Denver, Colorado, USA www.iceaaonline.org

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Society for Cost Analysis and Forecasting

For over 20 years the Society has sought to illuminate key issues in the analysis and forecasting of project costs—and to promote best practice within the cost forecasting community.

The Society provides a single point of contact for advice to those wishing to address key issues in the analysis and forecasting of costs and timescales of complex programmes.

Workshops and seminars are held at regular intervals throughout the year. A newsletter is published electronically 3 times a year.

Collaborative links with other societies has always been maintained and a library of relevant papers are available. A single annual payment at the Annual Conference entitles members to attend all the years' programme of SCAF events at no further cost. The Summer Reception is also provided free to SCAF members and their guests.

SCAF is committed to providing Continuing Professional Development (CPD) through the provision of its skills workshops and its support to Professional Development courses.

The Society is a Not for Profit organisation and continues to provide members with exceptional value for money.

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