THE EQUIPMENT CAPABILITY CUSTOMER

BY

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The Equipment Capability Customer (ECC) is a visionary with a mission:

'To get the right kit at the right time at the right price.'

The need is clear:

> 'The ECC's role is to identify future capability requirements and prioritise them. The best options for meeting the capability requirements are decided upon and the ECC formulates an equipment programme for their realisation. It then conducts a capability audit where the equipment capability planned in the programme is tested against a range of scenarios and time frames, taking into account the current strategic guidance. However, the fog of uncertainty pervades all of these activities.'

The future capability of the Royal Navy is driven by what we are expected to be able to do. The baseline assumption is that intensive war-fighting will remain the most demanding challenge to be met. But the Royal Navy also needs the capability to operate across the spectrum of operations from open hostilities against highly capable opposing forces to peace support and humanitarian aid. In fact, for most of the time the Royal Navy will be involved in operations at the lower end of the tension spectrum; humanitarian operations, peace support and conflict prevention. The majority of these will require working with the other two Services and members of the armed forces and security organizations of other countries.

Our forces will be shaped for expeditionary operations and rapid deployment. Thus, they will have to be highly mobile and able to be sustained in theatre for long periods of time. This 'theatre' may be a distant and undeveloped land that does not have any kind of 'normal' infrastructure. The threat may be simple or sophisticated and will evolve in the future as technology develops and proliferates. The operation may be manpower intensive and this calls for the ability to cope with manpower variations within platforms that are dependent upon the deployment scenarios.

The fact that we are unlikely to face the threat alone does help, but it also means that we have to be able to work, integrate and communicate with other nations. Some, like the US, are very sophisticated and more technologically advanced than we are, whilst others remain, relatively, quite primitive. This interoperability is a capability requirement. Its uncertainty is because it is difficult to predict whom our partners will be and how we will be expected to operate with them.

The ECC, looking towards this future world, is conscious of the fact that we will enjoy an increased technical capability brought about by the efforts of our research establishments and industrial partners. Allowing for the improvement of a ship's equipment throughout its life is something that has always been with us and we are well accustomed to finding space for new equipment in an already full ship's operation room (for example). However, it has now been officially recognized and is termed 'Swing'. The RN has identified 'Swing' as an enabler for the delivery of a versatile maritime force and the Type 45 destroyer is being designed with a capability of accepting 'Swing' from the outset. This is a remarkable

innovation as the designers cannot possibly know what form this 'Swing' will take.

The components of 'Swing' are that equipment to support a capability must be:

- Adaptable.
- Configurable.
- Simple in operation.

In network centric warfare language some of the equipment has to provide:

- Information superiority.
- Connectivity.
- Interoperability.

Also, because the ECC has to consider cost, another word, affordable, dominates the others.

Affordable

The pressure on all budget activities is growing. However, budgets are being scrutinized in a fresh way and consider the whole life costs of owning something rather than looking, in isolation, at the equipment programme and the short-term programme.

Adaptable

The ability to undertake a range of missions.

Configurable

A unit's ability to be set up to suite strategic, operational or tactical imperatives. This can be achieved through the use of modular systems or versatile spaces.

Simple in operation

The aim is to optimize the man-machine functional balance and man-machine communication.

Able to provide information superiority, connectivity and interoperability

Easily said but incredibly difficult to achieve as advanced technology is becoming more readily available to anyone who has a big enough cheque book and, as mentioned above, we do not know in advance who we may need to connect to or what we have to operate with.

Available and reliable

There must be a good return on the investment in modern technology and the high cost of ships, and this requires the ships and their equipment to be more readily available than hitherto. This translates to them being more reliable and requiring less upkeep time and is helped by the fact that reliability is now seen in terms that were unimaginable not many years ago.

The cynics can look at this reliability expectation and compare it to that exhibited by the drivers of modern cars. Some models will soon seal the engine compartment for life and some already do not allow the driver to have access to that which is under the bonnet. Translate this to the military and the Joint Strike

Fighter's (JSF) radar may be so reliable that it could be fit-and-forget for life (the availability and reliability predictions indicate that it will not break down).

Multi-role capability

Ideally, being able to reconfigure ships to operate in different, non-specialised, roles without returning them to base. The Type 23 frigate is a good example of a ship that has broken from its mould. It was designed as a towed array tug to fulfil an anti-submarine role in the cold waters of the North Atlantic Ocean. Fortunately it was able to 'swing' away from this as the 'Cold War' threat receded and has become one of the most versatile and effective frigates in the world. The design of the Type 23 was adapted to new roles and the success it is achieving at doing this has led to major changes in the way that ships are used and in the kind of deployments they regularly undertake.

Global reach

Allows us to perform anywhere at short notice in order to effect a credible rapid response. Thus our ships have to be capable of long endurance, reasonable speeds and unsupported sustainability. The Type 45 will be exemplary at this and is able to conduct a 45 day mission over a 7,000nm range. This will allow the Type 45 destroyer to respond in an evolving concept called 'early entry and early effect' by rapidly deploying to any theatre of operations, accompanied by, possibly, other vessels providing an early mine-hunting capability.

Survivability

A cost that cannot be avoided as, apart from the trauma the lack of survivability may cause, we simply do not have the replacement capacity. (One US assault in WW2 consisted of a task force that included fifteen aircraft carriers, with six more in the reserve and replenishment group astern). Survivability is the product of susceptibility, vulnerability and recoverability. Ships must therefore be designed to be robust, resilient and resistant and they must contain a level of redundancy that may even include the provision of 'sacrificial zones'.

Many of the ship's stealth aspects are relatively low cost as they can be designed into the ship where, for example, it is simple to draw the bulkheads a few degrees off perpendicular rather than straight up. However, the ships must include both soft and hard kill measures and these can be quite sophisticated and costly. Also the overall stealth effect is invariably a compromise that emerges from a complex and painstaking period of discussion. Survivability is referenced to the crew as well as the ship and (you will be pleased to hear) considerable efforts are being made to drive down casualties.

SMART acquisition

Another phrase dear to the hearts of the ECC and it is one that is in profit as a lot has already been achieved. Performance is being met, costs are under better control, bills are being paid, things are happening on time and the majority of the customer's technical requirements are being met. One indicator of this is the amount of money that is not being paid on time because the work that is late (block adjustment) has reduced from 18% to 6% since 1998.

SMART Acquisition allows us to better manage risk (within the CADMID cycle of Concept, Assessment, Demonstration, Manufacture, In-Service and Disposal). However the main cause of cost increase and delay are technical difficulties and we really need to reliably assess and quantify how risks are being reduced in the

pre-Main Gate phase (all before demonstration). Thus five IPTs are piloting the use of Technology Readiness Levels (FIG.4) as a mechanism for targeting risk reduction activity and measuring its effect.

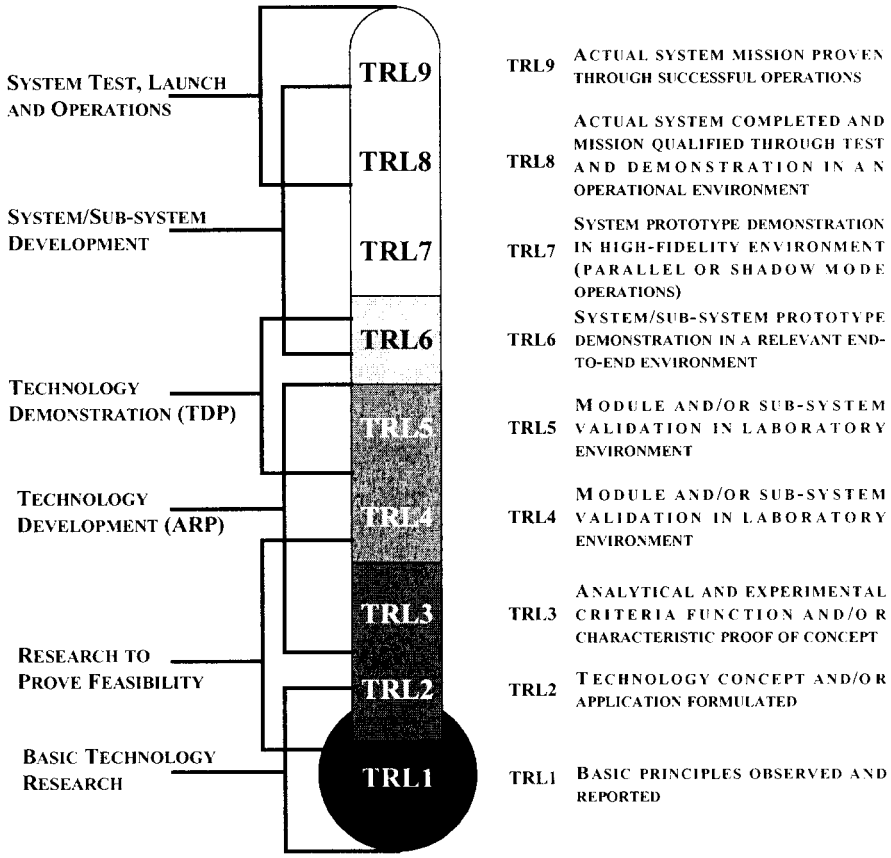

FIG.4 – TECHNOLOGY READINESS LEVELS

Cost of ownership

To afford the future we must have visibility of equipment or ship's Whole Life Cost (WLC). Failure to properly assess the on-going expenses once the purchase has been made could prejudice meeting the capability in the longer term. Inextricably linked to this is the need to drive down WLC in areas of manpower, training, and such consumables as fuel and ammunition. (Using virtual training in peace and improving precision and effect in war can conserve Ammunition).

Incremental Acquisition

Although not necessarily within the WLC equation as, unfortunately, the ECC crystal ball is cloudy, new ships will not be able to meet all of the capabilities that will be required of them throughout their predicted life. They will, however, start off this life with an incremental acquisition plan that will, as far as can be ascertained, prioritize the order of capability enhancements over the life and population of the class. For the first time in the history of the Royal Navy, the

Type 45 destroyer will have the extra space, spare capacity and margins of stability, strength and services to accept such a plan.

A VISION

To conclude, a quick tour around some capability requirement solutions:

ASTUTE

An example of prime contractorship is where BAE SYSTEMS are responsible for both the acquisition of the capability and its support. The programme has explicit requirements for capability evolution and incentives that are designed to reduce the platform's whole life costs.

The future carrier (CVF)

A good example of a joint defence asset that, in addition to delivering strike capability, will be able to deliver a host of other capabilities. Spearheading the Royal Navy's power projection role with the CVF and the JSF, it will be awesome. The detail is providing fascinating debate; whether it will feature Short Take Off/Vertical Launch (STOVL) or 'conventionally' launched aircraft. A demonstrator programme is investigating electric launch technology, as the CVF will not have the steam that was in abundance the last time a catapult was used. Also much research is being conducted in the sort of flexibility that is required and the best use of the internal space. Work is being done in areas such as improving aircraft handling, fuelling and arming so that the CVF moves on from systems that would be easily recognized by WWII deck crews?

The LPD(R)s

Will provide a measure of great strength in the littoral areas that feature in the SDR.

The Type 45 destroyer and Future Surface Combatant

Will clearly meet their capability requirements.

The Future Offshore Patrol Vessels, new Survey Ships, Ro-Ro supply vessels

All demonstrate the new acquisition approach of considering the capability requirement first, and matching it with a platform or equipment that closes that capability gap.

There is much work being done in making the ships and equipment more efficient. Automation and remote control will replace many of the tasks that do not require direct human involvement and these include control, surveillance and monitoring in areas of platform safety, survivability, sustainability and the 'float and move' functions that once required a lot of people. Some ships already use an 'unmanned machinery compartment' approach in their operating procedures and increased use of centralized monitoring and control from multi-mode workstations will soon become commonplace. Unmanned Air Vehicles (UAVs) are seen by many to be the single most effective capability provider in the recent operations in the Gulf regions and Afghanistan and similar UAVs and their underwater cousins (UUVs) are being considered for future platforms. Software generated and controlled radars, such as will be fitted to the Type 45 destroyers, will adapt to their environment and can be upgraded through the issue of a CD ROM. Further exploitation of Information Technology is obviously under the microscope as it develops from its already incredibly impressive position.

And, finally, the ECC has to consider the people. They worry about the complement of a ship and how people will fit into its role and mission. They look at the range of equipment a ship needs and the problems of sustaining it through that mission (e.g. damage control and fire fighting). They wonder whether the crew should be multi-role and multi-skilled with less emphasis on branch and specialisation and trade structures. They need to know the skill competencies that should be invested in engineer officers and ratings. They ask what tools do you require to do your job better? They have a healthy optimism about the fact that engineers will be seen amongst the smaller core complements that will fight, operate and maintain the future ships and the personnel that will provide specialist skills through shore support. After all, *Star Trek* has Scotty!

All they ask in return is for you to be optimistic, enthusiastic, creative and imaginative so that their dreams turn into reality.