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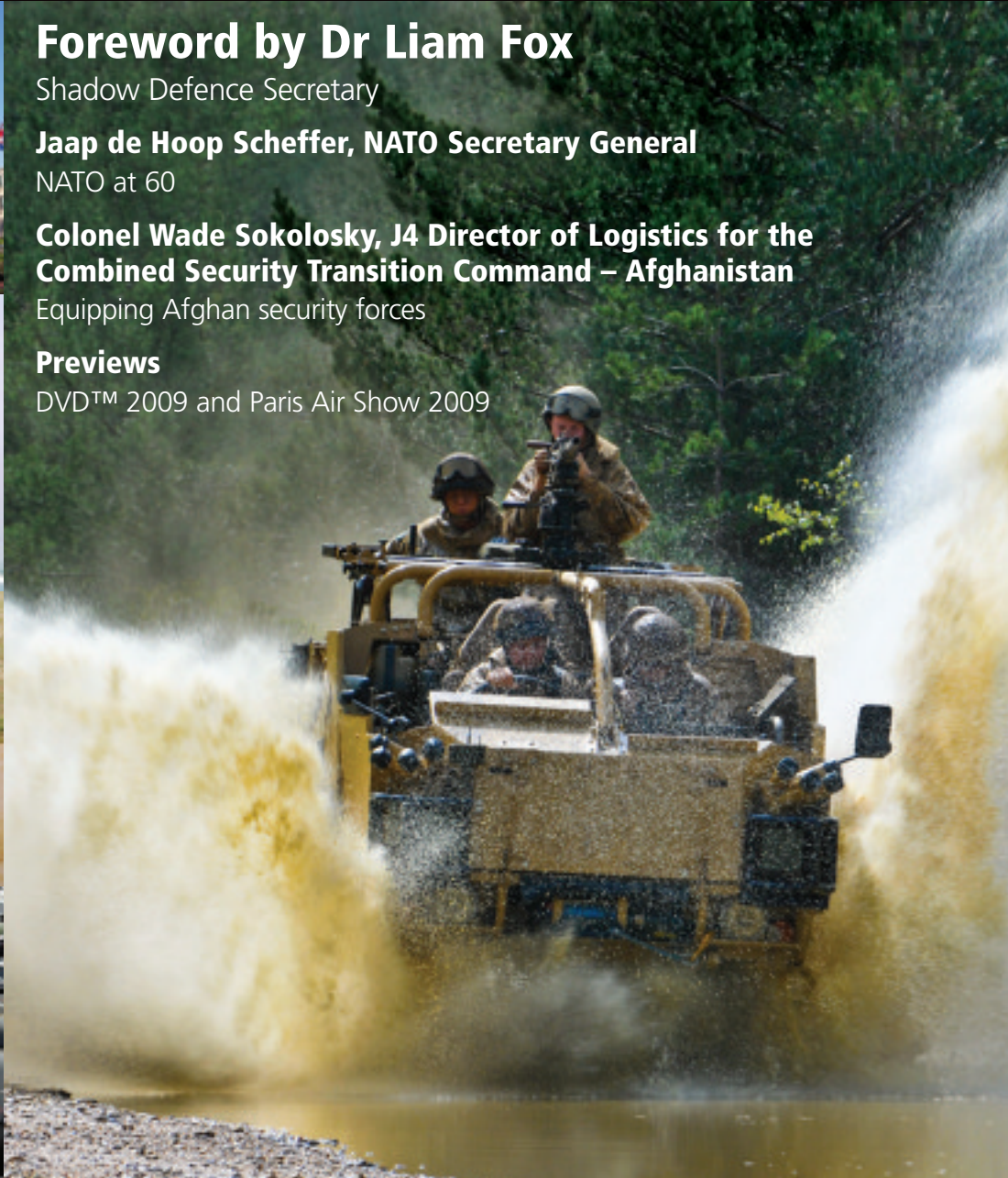
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# DMJ

DEFENCE MANAGEMENT JOURNAL



ISSUE 45 | SUMMER 2009



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# Achieving value for money...

...a systematic approach...on large and small projects...

**W**ith increasing public pressure on government agencies to demonstrate financial accountability, showing value for money in the delivery of products, services and projects has become a top priority. Responsively, the Ministry of Defence, like other departments, must employ sound and aggressive measures to closely manage projects from beginning to end. Whether it's the delivery of a multi-billion pound defence programme, nuclear facility remediation project, or small business concern, the fact remains that budget and schedule overruns, uncontrolled change orders, and the lack of proper scope definition will inevitably preclude a successful outcome.

## Effectively applying cost engineering is the key to achieving project success

With the reality of an economic downturn present in every decision, the modern day project manager has a heightened responsibility to be prudent at all times. Accordingly, the approach to establishing achievable objectives and timelines on his/her projects must not only be methodical in nature but also inherently cost conscious. Therefore, the application of an effective cost engineering system designed to safeguard against the common pitfalls that so often cost taxpayers millions in unnecessary spending is critical. Successful project managers in the UK and US are now utilising cost engineering best practices as their rubric when positioning their national and international, complex and simplistic projects, to complete on time and within budget.

## UK/US missions

The fundamentals of an effective cost engineering system enable large multifaceted programmes to execute

projects efficiently. The MoD and Nuclear Decommissioning Authority (NDA) in the UK, as well as the Department of Defense (DoD) and Department of Energy (DOE) in the US, share similar challenges when faced with the responsibility of controlling money and public services. Despite organisational size, location, or industry, only a programme prioritising its projects, time, and cost can realistically position itself to succeed in an economically conservative climate.

## Project Time & Cost and the Best Practice Cost Engineering Model

There is only one effective model for cost management success and, in the case of the NDA, DoD and DOE, one company engaged to assist them in meeting their service and financial goals. For more than 26 years, cost engineering/programme management specialist Project Time & Cost, Inc. (PT&C) has provided cost services to national and international clients. Its model for success, when applied systematically, has proven to achieve programmatic success in large and small governmental and commercial environments.

## Model for success (constructing a well-oiled machine)

### Thorough technical scope development

In an effective cost engineering model, External Independent Reviews (EIR) and Independent Cost Evaluations (ICE) are standard for current and planned projects. This is an important first step in achieving total cost management. Definition of all work to



be performed, as well as the products, services, and projects to be delivered, is the foundation upon which all future functions are built. Once the scope is defined, it is then arranged into a hierarchical numbering system called a Work Breakdown Structure (WBS). The WBS is the interconnecting fabric that allows a 'Golden Thread' to be woven throughout the entire delivery scheme or project, thus tying the scope, cost estimate, and schedule into a uniform package. In the case of the NDA, DoD, and DOE, project managers have successfully seen the effect upon other parts of their projects by simply pulling this 'Golden Thread' and observing what moves or changes within the total project. With all aspects of a properly developed baseline at the project manager's fingertips, 'what-if' scenarios, as well as the ability to quickly react to dynamic project events, are made possible. To date, PT&C has performed EIRs and ICEs of the project baselines at 11 of the 19 nuclear sites within the NDA estate.

### Detailed cost estimating and budgeting

To adequately support thorough scope development, precisely forecasted expenditures and defined limits are necessary. Both the US Army Corps of Engineers (USACE) and DOE have worked with PT&C to

benefit from this predictive process of cost estimating and budgeting.

DOE – In early 2007, the DOE Office of Environmental Management (EM) took measures to address cost, schedule, scope, and productivity issues in its efforts to conduct environmental clean-up of the US's nuclear weapons complex. It was through detailed cost estimating and budgeting that quantifying of anticipated costs for labour, equipment, and materials necessary to deliver their critical missions was made possible.

DoD (USACE) – Similarly, in an effort to assist the DoD's contracting office with its procurement process, PT&C provided independent government estimates for the military's Global Hawk and Predator facilities, as well as its Ballistic Missile Defense, Training Ranges, and Chemical Demilitarization programmes. These detailed estimates enabled DoD to adequately allot the appropriate funding required to carry out a variety of complex, sensitive tasks directly related to national security.

**Schedule development and management**

With project and financial objectives in place, core project management tools can be installed. Specialised schedule development and management software designed to properly co-ordinate project activities and logic are used to detail information regarding cash flow, financial forecasting, and budget constraints. In mid-2000, PT&C worked with USACE to perform scheduling and schedule management for various civil works, military, environmental, strategic missile defence, and international interagency services (IIS) programmes. The USACE division of DoD was then able to track project progress, set milestones, and record project task completions. With this capability, their project managers could, with an elevated level of specificity, monitor their project progress and make adjustments to those activities in jeopardy of missing performance goals.

**Value analysis and engineering**

As effective as the system thus far described is at managing projects, having ongoing value analyses is an innovative approach to remaining flexible, should the opportunity to obtain additional cost savings be presented. After PT&C conducted a thorough cost and schedule baseline review for one military waste processing facility, it was able to identify opportunities to reduce the government's total project cost by more than £190m.

The US military benefited from this systematic application of recognised techniques, which:

- Identified their service objectives;
- Established the worth of these functions; and
- Subsequently provided information on an alternate method to meet their required performance at the lowest overall cost.

**Earned Value Management System (EVMS)/project controls**

When a PT&C senior cost engineer was asked to define Earned Value Management, his response was: "EVMS is the tool we use to inform our clients of exactly what they have gotten for the money they've spent on a project." A more structured text book definition would be: the appropriate tracking of the project performance against the project plan. Regardless of which definition is used, the fact is that this critical system not only allows for proper performance-based payments, but it also affords project managers better control of their tasks, by way of project improvements, before delays to the critical path occur.

This step is key in:

- Measuring the performance of service providers;
- Determining if projects are encountering financial trouble; and
- Determining if projects are terminal.

**Risk analysis and management**

In every phase of the Best Practice Cost Engineering Model, the element of risk must be factored. PT&C's


experience in identifying potential risks and mitigating the effects on multi-billion pound equivalent US military, nuclear and commercial projects is currently benefiting the NDA by arming them with the tools to:

- Set realistic goals based upon any perceived limitations;
- Establish contingencies;
- Measure the impact of any risk to a project; and
- Employ procedures to control identified risk elements.

**The result**

All projects begin with an objective. Planning, organising, and managing resources to bring about the successful completion of those objectives rest solely with the project manager. Without fail, tactics and systems that enable identified goals to be met must be employed. PT&C's progress with the NDA, DoD, and DOE reflects evidence of the potential gains that entities with a wide range of multifaceted missions can achieve with this structured cost approach. Accordingly, this Best Practice Cost Engineering Model can be infused into any business or government operation to increase productivity and control expenses. For more information about tailoring this model to fit your programme, contact the PT&C office in your region.

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