It is generally recognised that a very large proportion (often put as high as 90-95%) of the life-cycle costs (LCC) is determined during the concept and design stages, before the system has been manufactured and often long before entry into service (EIS). Having said that, however, there is still considerable opportunity for minimising the life-cycle cost during the operational life of the system but this optimisation is constrained by the inherent reliability, maintainability and supportability of the system and its components. The role of integrated logistic support (ILS) is very much concerned with both of these areas: of ensuring the system is conceived, designed and manufactured to be operationally effective and; to provide through life support of the system to ensure that it remains so, even unto its grave (or disposal).

ILS is the management and technical process through which supportability and logistics support considerations of systems/equipment are integrated from the early phases of and throughout the life cycle of the product (Hillman, 1997). ILS is sometimes referred to as a “cradle to grave” activity but, to have maximum effectiveness, it should really be “lust to dust”. By the time the system has been “born”, it is far too late to have the influence needed to make certain that it will meet the operators’ needs. And, increasingly, the costs of ecologically acceptable disposal will come as a nasty shock to the owners if they have not been recognised and considered during the earlier stages of the life of the system.

There are very few components of any system, let alone the systems themselves, whether they are military or commercial, public or private, hardware or software, mechanical, chemical, electrical or electronic that will never fail, never need maintenance or never need support. Indeed, if such a
system does exist, then it has almost certainly been “over-engineered” or is so trivial as to be of no interest or relevance.

The end of the Cold War brought also the end of “arms at any cost”. The role of the armed forces is much more likely to be one of policing trouble spots than acting as a deterrent through “superior” firepower and technology. Defence ministries can no longer use the latest Mig, Stealth Bomber, ICBM or laser gun to justify research and development budgets that exceed the GDP of small and sometimes not so small countries. In the civil/commercial world, this has rarely, if ever, been an issue – few system operators have or are ever likely to have the capital or desire to buy systems which are likely to be uneconomical although it is extremely unlikely you could find a single operator who would complain that the systems he/she is operating is too reliable, too maintainable, too supportable, too available or too cheap to run. Even with the most modern gas turbine engines which have been known to stay on the wing for over 40,000 hours, it takes at least 4 economy class passengers on every 10-hour flight to pay for the cost of maintenance of these (two) engines and that does not cover the cost of the engines, the fuel and oil or any so called non-basic failures (i.e. ones not directly attributable to the engine such as bird strikes, stone or ice ingestion, etc.).

9.1 HISTORY OF ILS

Traditionally, military projects have been completed late and over budget. When they did arrive, the systems were quite likely to fail to meet the users’ requirements. They might suffer from poor quality, be unreliable, unmaintainable and unsupportable. A common criticism was that they spent more time in a state of failure than in a state of functioning.

It was generally thought that the primary cause of this was that the designers failed to give due consideration to the post-design stages: manufacture, operation and disposal. Failures, or poor reliability, would be blamed on the quality of the material used, the manufacturing processes, inadequate pass-off inspection, improper use, poor maintenance, in fact on anything except the design itself. A classic quote by the operators of British Rail (before it was privatised) was, “Our trains would run on time if they didn’t have to stop to pick up passengers.” This epitomised the prevalent attitude.

As with most things in life, regulations were brought in that caused the pendulum to swing to the opposite extreme. MIL-STD 1388 was the US Department of Defence's answer. This laid out, in minute detail, exactly what tasks and when in the life-cycle they had to be performed. It is probably fair to say that if all of the books written on MIL-STD 1388 were