

# Integrated Logistic Support (ILS) in the 21<sup>st</sup> Century - Innovation, Pragmatism and the Art of the Possible

## A free seminar for members of the MoD

### The BAWA Centre – Filton, Bristol – 6<sup>th</sup> June 2017

The cost of support for complex defence systems appears to be escalating and the quality of some support arrangements leave much to be desired, resulting in poor availability and high through life costs [TLC].

Effective and affordable support is possible however, particularly so with the technology that is available today. It can be challenging however for the ILS practitioner to keep up with all the appropriate trends in technology, particularly so as such technologies are not necessarily marketed as being relevant to Support Engineering.

The aim of this seminar is to introduce anyone with an interest in support, be they representatives of the Front Line Commands, Support Engineers, ILS or LSA Managers, to a range of technologies that have the potential to improve support.

As ILS is wholly dependent on the availability, the creation, the management and the exploitation of data and information; the seminar addresses how these activities can be facilitated, effectively and affordably.

All the data and all analysis is pointless however unless it leads to some concrete outcome, a different approach that will improve support and hence improve operational capability and/or reduce the Through Life Cost [TLC]. We will therefore also demonstrate how technology can help our technicians when they are conducting maintenance.

These technologies presented have common characteristics, they are robust, effective and affordable.

**NOTE:** Whilst we have taken steps to ensure that the day is not a series of marketing presentations, we will on occasion have to resort to using commercial solutions to illustrate the points being made.

The approach will be informal, we wish to encourage discussion and debate.

**If you wish to attend, please email [Peter.Stuttard@aspirecl.com](mailto:Peter.Stuttard@aspirecl.com), providing the following information for each proposed attendee:**

**Name:**

**Rank, if appropriate:**

**Position:**

# Programme

09:00	Registration	10:00
10:00	Introduction – Peter Stuttard CEO Aspire	10:10
Data Collection	10:10 – 10:35	Digital Pen Technology
	<p><b>Andy Loveridge – Business Area Manager</b></p> <p>Support Engineering is very dependent on the availability of historical data, of data gathered from the field; in the UK Defence sector however, the lack of high quality historical data is a major concern. There is no single reasons for this lack, but one of the contributory factors is the difficulty, the effort required, to collect the data in the first instance.</p> <p>In a world where people make increasing use of mobile devices, laptops and desktop computers, we still find that people make extensive use of pen and paper. There are obviously some benefits associated with this 'technology', and of course a number of drawbacks.</p> <p>Digital Pen technologies have been available for some time now, they retain the benefits of pen and paper whilst attempting to eliminate some of the drawbacks.</p> <p>There are a variety of approaches, using different technologies, but the one we are introducing today has some particularly beneficial characteristics.</p> <p>This technology is used extensively in industry, in the medical and social services sector, by traffic police, windscreen repair organisations, removals companies, in rail and civil aviation organisations.</p> <p>Do such technologies have a place in a modern support solution?</p>	
Data Collection	10:40 – 11:05	Mobile Devices and the "Survey Task"
	<p><b>Paul Messer – Lead Software Developer</b></p> <p>Mobile devices play an increasingly important part in our personal and in our business lives. This presentation introduces the concept of using mobile devices to facilitate the collection of data when an engineer is conducting some form of "Survey" task, for example, when conducting an equipment condition survey or certain preventative maintenance tasks, for example zonal surveys. The mobile device can not only be utilised to guide an engineering through a complex process, they can also be used as a means of collecting "survey" data and then ensuring that that data is stored and managed appropriately.</p> <p>Paul will introduce the concepts and demonstrate how, and how easily, they can be deployed.</p>	
11:05	Coffee	11:30
Data Management	11:30 – 11:55	Creating Data – Managing Data
	<p><b>Oliver Scott – Software Developer      Lee Fitzsimons – RCM Lead</b></p> <p>In the past an over emphasis on the Logistic Support Analysis Record, the LSAR (or Logistic Information Record [LIR]) has contributed to the poor performance of many ILS and LSA programmes, in terms of cost and effectiveness. As a result, LSAR's / LIR's have attained a poor reputation and their utilisation is now limited, typically to a few very large, long running programmes.</p> <p>The reality is that Support Engineering requires us to make extensive use of large quantities data and information; we need to manage that data effectively, and hence we need effective applications, effective Support Engineering tools, that utilise those databases.</p> <p>The problem is that applications that meet the needs of today's Support Engineers are rarely available, organisations could develop their own of course, but there is a great reluctance to do this, the technical risks and the costs are seen as being too great, for even fairly substantial organisations to undertake this task.</p> <p>The aim of this presentation is to demonstrate that highly effective applications, highly effective Support Engineering tools, can be developed by even small organisations, that the risks are acceptable, the costs are affordable and the potential benefits are very significant.</p>	

<b>Data Exploitation</b>	<b>12:00 – 12:25</b>	<b>Manipulating – Merging – Moving Data</b>	
	<b>Paul Messer – Lead Software Developer</b>		<b>Lee Fitzsimons – RCM Lead</b>
	<p>Effective Data Exploitation requires the ability to gather data from a range of sources, to mesh that data together, to manipulate the results, to export the results in a wide range of formats. This can be achieved, quite readily, by deploying xml and xslt. Data can be extracted from databases and published as Word or PDF documents. Information can be presented as an HTML 5 web page, which is in itself sortable and manipulatable, data modules can be created or data simple moved from one database to another, an LSAR say, to a Maintenance Management System [MMS] for example. This presentation will demonstrate what can be done, and how readily this can be achieved, and at low cost.</p>		
	<b>12:30 – 12:55</b>	<b>Interpreting and Exploiting Data</b>	
<b>Matt Gibbon – Modelling Lead</b>			
<p>A lot of data is not meaningful in its raw state; it requires some processing before it transforms into information that can be used to trigger some decision, some action. This presentation will demonstrate a number of ways in which data can be so manipulated, ranging from simple statistical analyses to the use of advances simulation techniques. The options available increase every year, commercially available, “off the shelf tools” greatly facilitate our ability to analyse data effectively – to exploit the information that is available. Modern simulation tools enable us to model individual maintainers, operators and platforms in a support solution; these are “Agent Based” models. Other tools expedite the management and the presentation of data in a manner that facilitates effective decision making. This presentation aims to demonstrate some of these tools, to demonstrate that such tools are readily accessible and affordable.</p>			
<b>12:55</b>	<b>Lunch</b>		<b>13:35</b>

13:40 – 14:05	<b>Augmented Reality</b>	
<b>Ashley McConnell – Konica Minolta</b>		
<p>The concept, that Augmented Reality [AR] can be deployed as an engineering tool to facilitate; more effective maintenance, fault finding, inspections or repair tasks, has been accepted for some years now. Diverse organisations responsible for maintaining, lifts, vehicles, photocopiers and air conditioning systems, have experimented with and trialled the technology. The supporting technology, the available “glasses” for example, have constrained its wider deployment. The technology however is constantly developing, and the pace of that development is accelerating as organisations with very deep pockets, such as Google, Microsoft and Apple get on the bandwagon.</p> <p>Should the MoD be experimenting, trialling, the use of AR for support purposes, should they be looking to see what the potential is for training maintainers, or for its use in a live maintenance environment?</p> <p>There are some quite basic and some very advanced forms of AR and such a trial need no longer be prohibitively expensive, nor does it necessarily require significant levels of expertise or expensive technology in order to engage in such trials.</p> <p>This presentation will introduce a readily accessible, affordable, means for accessing an AR capability.</p>		
14:10 – 14:35	<b>Mobile Device, Maintenance and the Internet of Things...</b>	
<b>Paul Messer – Lead Software Developer</b>		
<p>We have already been introduced to the potential of Mobile devices to support the conduct of survey tasks and to facilitate the collection of important field data. Mobile devices have significant potential beyond this limited role however, if we consider their use in combination with other technologies, for example the Internet of Things and the concept of “Mesh Networks”.</p> <p>This presentation will explore the relationship between these technologies and how they are relevant to support engineering. These technologies may seem somewhat esoteric, but they have significant potential, in the field of Support Engineering, they can facilitate condition monitoring, data gathering, training, and the very effective promulgation of technical information, etc.</p>		
14:40 – 15:05	<b>3D Technology meets XML</b>	
<b>Vic Steadman - Aspíre Executive Consultant</b>		
<p>In the Defence sector Technical Publications are the topic of much debate; they are a critical element of virtually every fielded support solution, the quality of electronic publications can be very poor, their capabilities limited, and the costs astronomical.</p> <p>It is hard to understand why this is the case in the 21<sup>st</sup> century, we have the techniques, the technologies and the resources that enable the production of very flexible high calibre content, at a reasonable cost.</p> <p>This presentation will introduce some of the technologies and techniques that can be deployed to produce high calibre, very capable, publications at a reasonable cost.</p>		
15:10 – 15:35	<b>Increasing Availability by Reducing No Fault Found</b>	
<b>Giles Huby – Copernicus Technology</b>		
<p>No Fault Found (NFF) problems have plagued the support of aircraft and vehicle systems for decades, and occur when technicians are unable to isolate the root cause of a fault. These unsuccessful repairs create repeat arisings and repair rework, which incur additional and avoidable time, spares and cost before the fault is successfully rectified. Meanwhile components that get replaced during unsuccessful repair attempts are sent for repairs they don't actually need, also consuming additional time, spares and cost. At best NFFs lead to costly repeat arisings that degrade aircraft operational reliability or despatch rates; at worst they impact on safety and airworthiness. Studies have shown that the cost impact on MoD air platforms alone is of the order of £500M every year.</p> <p>The US DoD has quantified the annual cost impact of their NFF problems at well over \$2B per year and this led them to introduce Intermittent Fault Detection (IFD) test equipment to tackle the problem. IFD testers have been successfully applied on US DoD and MoD platforms for testing of wiring and avionics boxes (“LRUs”) and this presentation will describe the link between intermittent faults and NFFs, and several case studies will illustrate how this testing approach is successfully applied.</p>		
15:40	<b>Discussion and Summary</b>	16:05