

CMS products allow efficient management and distribution of documents and technical publications associated with aircraft continued airworthiness in a digital environment. Establishing the need and therefore extent of the role required from a CMS service is a key part in the selection process.

# CMS selection - the rationale & main issues

**C**ontent management system (CMS) products act as a platform to import, reconcile, and manage the endless stream of maintenance and engineering information, content and updates that are issued by the original equipment manufacturers (OEMs) and managed by the airlines and maintenance repair organisations (MROs). CMS services can be provided by OEMs or by independent providers.

CMS products offer a range of formats. These include a digitised technical library, a flexible authoring and editing tool, and an interactive software system capable of handling OEMs' differing information standards. These assist and also interact with the organisation's maintenance and engineering (M&E) IT system.

Each business's needs from a CMS will be evaluated during any selection process. The resulting development of the operator's technical library will in turn improve regulatory compliance, save time, reduce subscription costs to updating services, and improve safety.

This article looks at the independent providers and the services available to match the needs of airlines and MROs.

## Primary focus

For airlines and airline maintenance departments, tendering for a CMS will usually result from some kind of change in the operation. This will be the introduction of a new fleet type, or the adoption of mobility on the hangar floor involving a greater shift to the need to have electronically stored information.

Independent MROs are not normally

CMS users, since they tend to accept their content direct from the operator or an operator's continued airworthiness management organisation (CAMO) or engineering department. There is still a requirement, however, to have some kind of smart content conversion tool where documents like the maintenance planning document (MPD) used for quotations are maintained to a level where revisions issued by the OEMs can be made automatically.

"Airlines and MROs are very different," says Thanos Kaponeridis, president and chief executive officer of AeroSoft Systems. "Airlines require compliance, while MROs are interested in the workpackage they are bidding for. Airlines have a wide range of aircraft types they are interested in, as do MROs. Because OEMs offer 'digital content' for their own products, each in their own way, they are totally different technologically and commercially to each other. A CMS is intended to provide a common environment, which is agnostic to data from each OEM, and based on the true digital content standards which have been endorsed by the industry."

Nick Godwin, managing director at Commsoft, the vendor of the OASES maintenance and engineering software system, adds: "From Commsoft's perspective, it is clear that the requirement for a CMS, along with M&E solutions, is driven by regulatory compliance as the central theme. Commercial factors also become important in ensuring that the maximum business value is derived from the system. This in turn can be influenced by the system's financing terms. As such, the selection criteria will be unique to each

airline or MRO, but will be a mixture of compliance, commercial and financial factors. Usually CMS systems, building on existing capabilities in M&E systems, are affordable only for larger organisations."

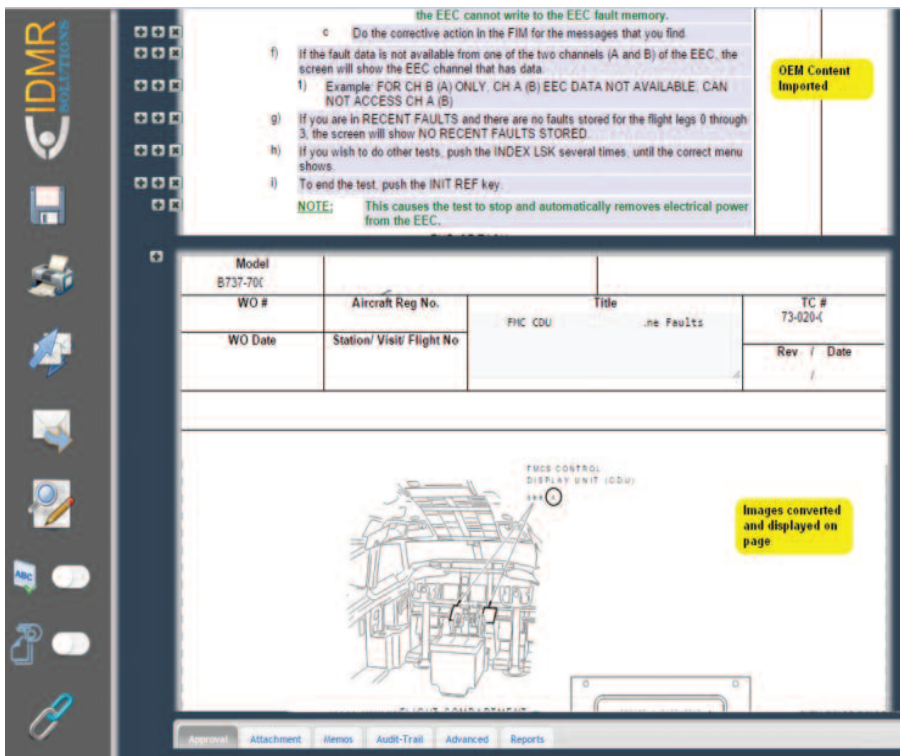
CMS product demonstrations often lead to a request for information (RFI). After in-house analysis of the organisational needs, a request for proposal (RFP) will be sent out to invite tenders from a subset of CMS providers that meet their perceived commercial and technical terms. "Consultants are often invited to assist the buyer or airline, since the requirements can vary so broadly because they have large technical and commercial implications," notes Kaponeridis.

## CMS versus M&E

There is a dividing line between the functionality and individual purpose of a M&E system and a CMS service.

M&E systems are typically a solution for all of the MRO maintenance event planning, execution data, internal supply chain management and logistics, man-hour booking recording, and resource planning. Businesses may also have a separate or joint enterprise resource planning (ERP) system, or commercial invoicing tool.

A CMS is a solution for electronically storing published OEM technical manuals. This allows the automatic updating and generating of re-usable supporting maintenance information via integration into existing M&E IT applications. The point where the two systems meet is normally when the work package for a maintenance event is



generated. This can be to construct the entire workpackage, or just to source the latest work card attachments.

Paul Saunders, solutions manager at Flatirons explains: "If you are building an 'A' check package, you generate a list of due tasks in the M&E system. An integration tool sends that task list to our CMS system, which assembles all of the authoritative content. The system prints out the work pack electronically or physically, depending on the M&E system's sophistication, what the MRO process is, and the degree to which the operation is paperless."

CMS software products, or document management systems (DMS), can also be found within some M&E systems as standalone modules. A CMS can also be available through partnerships between CMS and M&E software providers.

"We have formed mutually beneficial partnerships with a few M&E systems," explains Israel Revivo, president and chief executive officer of IDMR Solutions, a provider of CMS software. "We feel that teaming up with M&E systems provides our customers a one-stop shop for all their M&E needs. Our CMS provides a complementary solution to any M&E system."

Kaponeridis adds: "There are 'trial and error' efforts of implementations which are selected independently, and then may be promoted as integrated solutions. It is important to investigate how each case is a standardised solution, versus a 'one-off custom-built environment.'"

From an M&E IT solution provider's perspective Godwin adds "Our general development policy is to ensure that the OASES M&E system is agnostic to other

systems, including CMS systems. Using the power and flexibility of the installed database, allied to an agile commercial and technical approach, Commssoft offers affordable bespoke interfaces to any system, as and when our customers demand such support."

## When to have a CMS system

An MPD task is a single fragment of an electronic information repository, which can be reused in multiple places scaled up by multiple configurations and aircraft types. This gives an idea of the scale of information that CMS services can be asked to deal with. Add to this the large amount of authoring, editing, and work card customisations then a sophisticated specialised CMS may be required above the standard offerings of document management within general M&E IT software.

"You would not think of managing 300 aircraft without a CMS," comments Saunders. "Small airlines' technical publishing departments tend to be just responsible for distributing and managing the information. It is at larger airlines, where there is a need to author their own internal documentation, that you will see a need for greater CMS support. The Flatirons' entire CMS CORENA suite, for example, allows content authoring, editing, managing and distribution, along with consumption and re-use."

Re-use is an important point when it comes to the extensible mark-up language (XML) format used in information presentation and the use of a CMS. Since the document only has to be authored once, if that information is used again in the same manual, or other document in

Using an interactive CMS allows OEM revisions and updates to instructional documents like the AMM, and task cards to be imported and displayed automatically. The ability and extent of any authoring ability within the CMS system or module will be a point of note when tendering for services.

another manual in a different context, then that content is being 're-used'. Importantly, if the content is changed in one place then all the changes, edits and revisions flow automatically through to all the linked documents.

"The idea of re-use is not just about authoring something once, but about the information flow through all of the linked procedures and items within the repository," explains Saunders. "So if you have a truly integrated system then a part number change at the top would flow through for all of the other documents requiring the information change. This would include all of the MPD tasks, planning information, the ERP and alternative parts system. Information is reconciling everywhere it is referred too. This is the main advantage of today's CMS capabilities."

CMS products additionally aid the content lifecycle management (CLM) of the aircraft. CLM mirrors product lifecycle management (PLM) and service lifecycle management (SLM), but refers to the technical content of the aircraft.

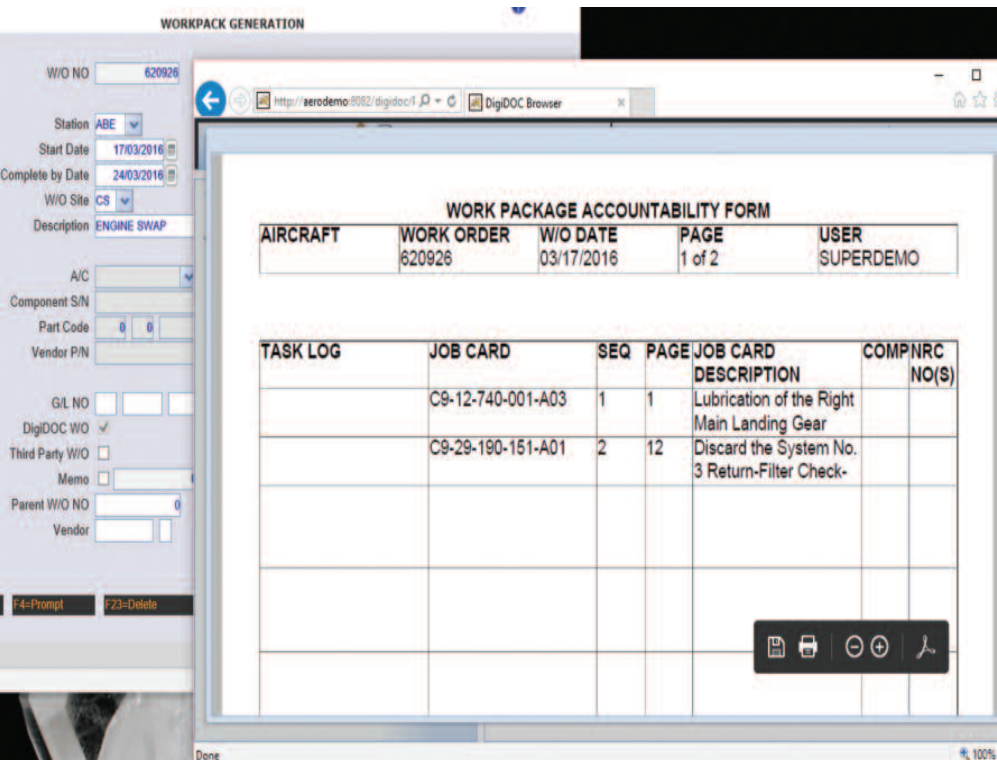
OEMs use the PLM because it allows them to manage the aircraft's design and manufacture. M&E systems use the SLM for the operation, maintenance and transition of the aircraft, while the CMS manages the lifecycle of the aircraft's documentation during its operation.

Content needs to be authored, managed, and distributed by the OEMs during the aircraft's lifecycle. It is then customised and edited to suit each operator's M&E needs, and bundled up and sent to the new owner/operator upon change of ownership. CLM manages documentation from cradle to grave.

## Fleet type complexities

Each airline's fleet type and subsequent data complexities can influence the CMS selection process and document management services needed. Depending on when and by which manufacturer the aircraft were built, their documentation conforms to varying standards.

One of the more recent documentation specifications is iSpec 2200, first published in 2000. This incorporates the previous ATA 100, for the chaptering structure of information. It is iSpec2100 specifications which focus on electronic data exchange implemented



by standard generalised mark-up language (SGML). iSpec 2200's aim is to minimise the cost and effort used by document managers by creating a model for the digital representation and exchange of structured technical data.

The development of XML resulted in the further specification S1000D. S1000D requires a document to be broken down into individual data points, which can be marked with individual XML labels and metadata. Metadata helps organise electronic resources and provide digital identification.

"A state-of-the-art CMS should be fully conversant with the standards as well as Darwin information typing architecture (DITA), which is an XML data model for authoring and publishing, that can deal quickly with the variations encountered," explains Kaponeridis. "It should also deal with other enterprise documents, which are typically authored in non-controlled structures."

Saunders adds: "Boeing or Airbus offer their own CMS solutions, which are optimised for their own aircraft types. Flatirons offers a solution that is OEM-agnostic to handle content of any aircraft within a single system, including both legacy iSPEC 2200 and next generation S1000D aircraft. The 787 and A350, for example, need an S1000D-compatible system, while the 737, A320 and even the A380 need an iSPEC 2200-compliant system. So if you are operating an A350, a 787, a 737 and an A320 fleet, you need four different systems, or one system from us that will handle everything. Content management is complex and there are many different content types. It is our core business to handle the content management and to drive improvement

for access to the technical content."

## Independent CMS Solutions

### Flatirons

The Flatirons document management system CORENA Suite has a variety of CMS support products, including CORENA Studio for XML content authoring, and CORENA Knowledge Centre for revision management.

For interactive viewing of content, there is CORENA Pinpoint for web-based publication access, and CORENA Pinpoint Mobile for technical content on mobile devices.

With expertise in consultancy and CLM, Flatirons' CORENA suite of products interfaces with M&E systems to generate work packs, reconcile and update OEM and airline/MRO-supplied information, and provide tools for advancing mobility within maintenance and airline operations by the ease of access to airworthiness content.

Announced in October 2015, Flatirons CORENA Suite of products was chosen by the Federal Aviation Administration (FAA) to manage their technical publications for the National Airspace System (NAS).

### AeroSoft Systems Inc

The OEM-agnostic AeroSoft CMS product is called DigiDOC. It provides a documentation management/publication base that works with any M&E system, and any OEM-proprietary system.

AeroSoft is unique in the market with two MRO/M&E systems, plus one CMS

*Work pack integration is often where CMS and M&E IT systems meet, allowing for the automated supply of re-usable supporting maintenance information to Job Card references.*

product for maintenance and engineering support. AeroSoft's DigiDOC suite can therefore be used as an independent CMS system. It is often combined with the additional M&E AeroSoft products for fully integrated solutions.

Kaponeridis adds. "We have implemented both standalone and combined use of the DigiDOC product. In the case of integration, we use standard application program interfaces (APIs) with our products, as well as third-party MRO/M&E software. The variation always depends on the customer's existing digital document investments, how they are dealing with job and task cards in the context of their existing MRO/M&E, and also how flexible they are in adopting and adapting the capabilities of DigiDOC.

"DigiDOC has specific editors and processes for MPD, IPC, wiring diagram manuals (WDM), task cards and engineering orders (EOs). These all validate data against the database for each document type," continues Kaponeridis. "We also have revision comparison, validation and promotion to approve for all digital manuals such as the AMM, IPC, troubleshooting manual (TSM), fault isolation manual (FIM), structural repair manual (SRM), engine maintenance manual (EMM), and other iSPEC2200 manuals. AeroSoft can also deal with PDF versions of manuals, as well as Enterprise documents authored in MS Word, Excel, and other formats, with obviously lower capabilities than against SGML/XML data streams."

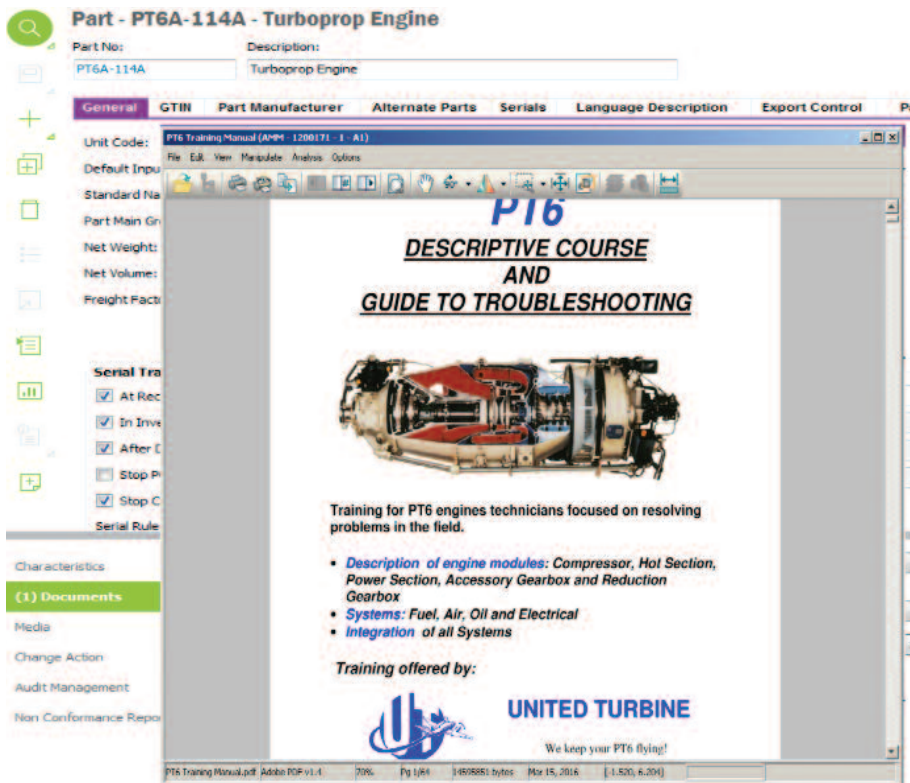
### IDMR

IDMR is a global provider of technical documentation management solutions which have been designed exclusively for airlines, MRO providers and OEM organisations, and include integrated CMS and DMS.

IDMR's InForm product allows users to author and maintain their documents in a single repository. The solution consists of modules including Technical Library, Engineering Orders, In-House Manuals and Job Cards.

IDMR has recently launched a native iOS (iPhone mobile operating system) app to deliver manuals directly from the CMS platform. This also syncs mobile devices.





## CMS/DMS as a M&E module

As already stated, the larger the airline the more likely it is to have a pure CMS to manage its own document edits and revisions. Another option is a CMS within an M&E IT system where the smaller airlines and or MROs get the manufacturer to revise the content.

Chris Reed, managing director at Trax, notes: “For airlines tendering for an M&E IT programme, it is vital that an M&E system has a CMS, because if it does not, you have to buy another product to deal with it. It is not a big deal for airlines operating 20-year-old aircraft. But if you are buying and operating new aircraft then digital documentation is a big time and money saver, so a CMS should be part of their M&E system.”

Trax is an M&E management system which has an internal digital library CMS as a module called TraxDoc. This provides a DMS solution internal to the Trax application.

Documents in any format (hard copy, Word docs, Excel files, images, video, audio, PDF, SGML & XML) can be stored in the Trax database and made available to the users (published to view globally in PDF format).

“The basic flow in this environment is that the OEM provides an electronic document, which the airlines amend to their own needs, and then use it to carry out maintenance on an aircraft or component,” explains Reed.

“Some OEMs will revise and update the document according to what the airline needs, feeding it back to them,” continues Reed. “Some airlines will stand on their own from day one, incorporating

their own changes and modifications to their own documents by using a CSM module.”

Another leading M&E system with a document management functionality, while being fully integrated within a broad enterprise resource planning (ERP) solution, is IFS Applications.

Tony Louw, aerospace and defence MRO expert at IFS Aerospace and Defence Centre of Excellence, notes: “For the more detailed CMS needs, IFS Applications provides full integration to the capabilities provided via a best-of-breed CMS offering, by working closely with various providers to deliver fully capable CMS solutions. Once a document is held in the IFS document management module, it is possible to link the various documents to different business objects within the ERP suite, depending on the context in which they need to be used. For instance, a photograph of a defect/failure can be attached and connected to the defect report.”

For M&E system provider Commssoft’s OASES software, all manuals or other documentation can be held in the format supplied by the OEM. “The airline or MRO can load or digitally link OEM manuals, task cards, images or even films beneficial to the planning and production processes,” explains Godwin. “OASES provides a flexible solution, allowing airlines and MROs to load MPD or other OEM-supplied data in a range of formats. Each revision of a task card can manage its own supporting documentation, ensuring that the correct information is issued to engineers on approval of a new AMP.”

Godwin also notes. “OASES allows

Large workforce efficiency gains are achievable by the uploading of OEM manuals into M&E IT systems. This is by obtaining access via a link to the CMS system for hangar floor staff reference.

planning, tech services, hangar and line mechanics to easily access the documentation, by means of scheduled task card or non-routine card (NRC) attachments (printed or PDF), or by simple interrogation of the information and documents within the system.”

## Information transfer

CMS software handles data that comes in several formats and information standards, including SGML, hypertext mark-up language (HTML), PDF and XML formats. The handling and transfer of the information to and from various IT systems will sometimes require system connecting integrator tools and should be investigated in the selection process.

Both SGML and XML formats are entirely written in code, which needs to be rendered and presented in an understandable viewable format. Using intelligent documentation provides the ability to search and navigate through documents because of their marked-up or ‘tagged’ content. XML also allows intelligent cross-referencing, revision management, and effectivity/applicability management. It also keeps the technical data totally independent of how it will be viewed. This is important when converting for mobile devices, such as tablets and smartphones. For an airline with a mixed fleet, or an MRO with different maintenance programmes in its capability, data integration can be more complicated.

“For information transfer there is normally an integration point at work pack generation,” explains Saunders. “The M&E system will be used to forecast, plan and record execution of tasks. In the case of the Flatirons, CORENA Knowledge Center and CORENA Studio software programmes will collate and manage the content that makes up the assembled work pack, ensuring the latest content from the various sources is returned and reconciled. The complexity comes with a mixed fleet/mixed OEM/mixed standard technical content environment. An operator flying both 777s and A350s has not only Boeing and Airbus content to manage, but content in ATA iSpec 2200 and S1000D to contend with. We allow

this management to happen in one single tool and one single interface for the airline user.”

Revivo adds: “IDMR’s InForm Technical Document Management suite of solutions works with most M&E systems on direct integration. Some customers use Webservices, and others use shared exchange tables. Since every M&E system is unique in its development, we use a mix of standards to achieve a seamless integration.”

On the M&E software side, software like IFS Applications can support interfacing to a CMS via standard hyperlinks. If the operator has technical publications in both Interactive Electronic Technical Manual (IETM) and PDF format, then using the existing capabilities provided by the document linkage function enables them to easily launch and view the contents of the documentation in the source applications it has been published in.

An external provider of digital solutions, including information integration solutions, is EXSYN. EXSYN’s TITAN and Integrator systems, which transfer data between systems respectively, connect a variety of systems without human interaction.

Sander de Bree, chief executive officer at EXSYN, explains: “For MRO providers, EXSYN has developed its universal interface solution Integrator to automatically exchange data between

systems, while its TITAN solution is used to transfer bulk data from one system to the next. Such solutions, per definition, require connections on a database/server level. Integrator, however, allows communication between systems on a digital User Interface (UI) level to retrieve data.

“We have also embarked on a specific project to develop optical character recognition (OCR) scanning technology to completely scan a work pack that has been received in PDF,” continues de Bree. “We use algorithms and optical recognition technologies to completely digitise the entire PDF work pack into a structured format that could be uploaded into a database. We recently did a full-scale testing with a work package, and found that the process significantly reduced required manual inputs. From receiving the work package from the customer it could be processed within the M&E system in less than three hours. This includes the system being able to tell the scope of work to be done, what should be quoted in terms of man-hour (MH) pricing and material costings.”

Additionally, EXSYN has developed a protocol extension (internally referred to as AviBot) to its TITAN solution. “We developed a particular programming protocol which trawls all web pages that are used by the OEMs, and acts as a publication portal for OEM documentation,” adds de Bree. “This

protocol then scans that entire content and downloads, for example, the entire aircraft maintenance manual (AMM), IPC, MPD, or minimum equipment list (MEL) from the OEM portal, and then stores it in our central repository. There it can be used in processing actions within Titan to make that information available to MROs and airlines.” By applying this technology in its TITAN solution, EXSYN reduces a significant amount of human input in an airline M&E system.

## Cost

Selecting the right CMS support is not only about saving money by reducing overheads in the support offices, or increasing MH efficiencies by achieving faster access to information, but is also a way to safely manage larger fleet sizes, especially of varying type and manufacture.

Saunders explains: “The cost of managing an independent CMS system means that only the very large airlines tend to have one. A high level of sophistication is needed in fleet configuration management in the first place to get a good return on such an investment. Operators with a fleet of identical aircraft tend not to get the same level of return on investment, because the fleet management is less complex.”

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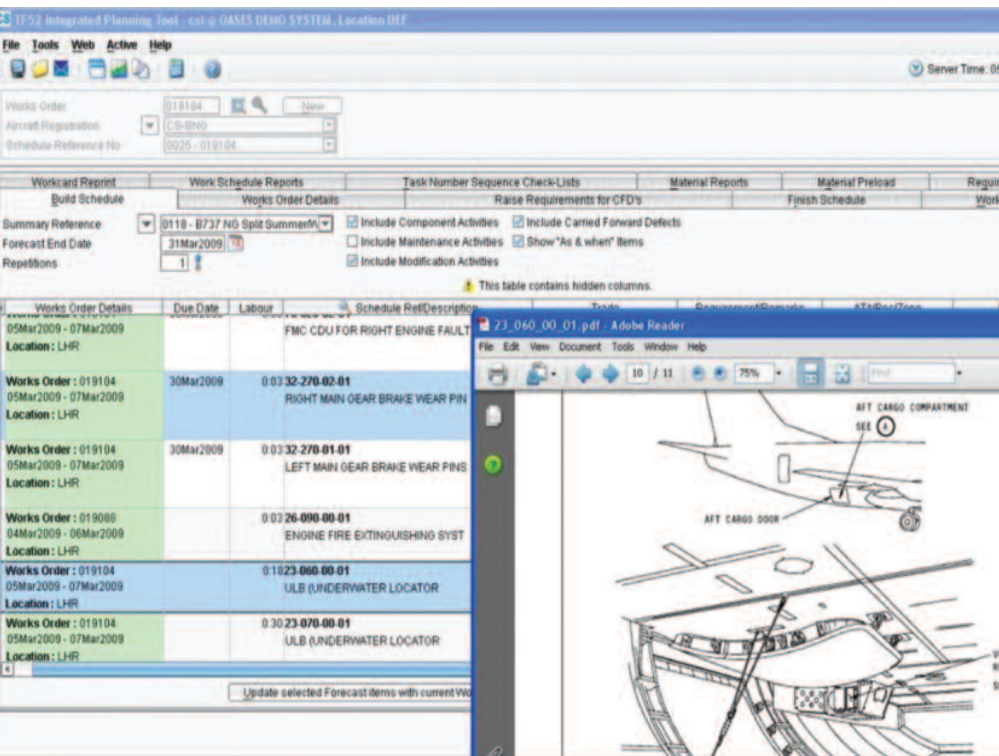
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years difference in manufacture date is a massive manual task, however. The elimination of duplicate subscriptions to OEMs services, and keeping up with any OEM revision, are additions to the cost saving analysis to justify a CMS solution.

“Complexity (therefore cost) is proportional to fleet diversity, fleet age, PDF (ATA-100), versus iSPEC2200, versus S1000D and so on,” adds Kaponeridis. “Complexity and costs rise as you increase the level of integration and the retention of legacy data which may be embedded in the ‘MRO/M&E’, which now should best reside in the CMS. Complexity and costs vary, since even those OEMs claiming compliance to iSPEC2200 or S1000D have significantly different versions/implementation.”

## Mobility

The move to a paperless maintenance environment can be key in the CMS selection process. Even more so is mobility. Although the global adoption of paperless working for the aviation environment is only moving forward slowly, interest in using CMS products to increase mobility on the hangar floor is adding to the scope of services needed.

“There is a strong drive towards mobility and enterprise-wide solutions in airlines,” explains Saunders. “At Flatirons we are often called upon to provide consulting services into how companies should embrace the tools and practices to leverage S1000D, content reuse, mobility and so on. There is a difference between organisations that publish XML or S1000D, because they have to, and those that recognise the value of doing so, and want to drive

efficiencies to the end-users of their technical content so that they can use it to its potential.”

Reed adds: “Mobility is definitely something that we have been working on at Trax. It is mobility that is critical at the moment. We are releasing an entire new suite of software that will promote mobility called eMRO, which is our new fully web-based software.

“There are time savings to be gained,” continues Reed. “When mechanics need documentation while working in the hangar, most M&E/CMS systems will provide the AMM system references with the task card, but when mechanics need additional information, they have to go back to find a work station to find the right papers, which could take 10 minutes every time. You can access the content immediately when you have a mobile device. There is definitely a case for mobility in line maintenance, since it is more critical, particularly in Europe. A compensation to passengers as a result of a three-hour delays means that manuals should be accessed immediately. This is made possible by digitized content on a CMS.”

## Visual displays

The role each CMS solution’s visual display plays in the selection of a product will depend on the intended use and depth of scope of the software. There is a tendency in the business environment to accept that displays are not pleasing to the eye or easy to use. Progress in mobile and paperless maintenance engineering activities have moved the focus of documentation and manual content displays towards creating a greater UI

*The digitisation of the airlines’ and MROs’ technical libraries will improve regulatory compliance, save time, reduce subscription costs, and improve safety.*

and user experience (UX).

“UI is always important. The ability to adopt and adapt it to accommodate different delivery platforms (PC browsers of different sizes, tablets, mobile smart phones) is key. Just making it ‘smaller’ or scrolling does not work,” explains Kaponeridis.

Saunders adds: “The visual display is certainly a factor with the end-user facing software, such as Pinpoint and Pinpoint Mobile our Interactive Electronic Tech Pubs (IETP) software. Content management is complex, so reducing that complexity for the user is not easy, but we are getting there. Certainly when we add mobility into our world it forces software vendors to be more mindful of producing software that has a good user experience.”

Having the right tools to handle the desired visual outcome of the information also needs to be considered. “One of the nice features in the IDMR application, especially on OEM graphics which come in computer graphics metafile (CGM), a format not fully supported by web browsers, is that we convert all the graphics and display them on the page,” explains Revivo. “There is no need to license other programmes, or link to pop up the graphics. When writing task cards or manuals, you have the tools needed to embed the graphic onto the page.”

## Links to OEM

The OEMs themselves have their own CMS programme, such as the Boeing Performance Toolbox and Airbus ADOC options. Obtaining access to the current information, like the latest AMM or IPC, is critical for airlines and MROs.

In the case of M&E systems combined with a CMS, document revisions are handled in the CMS. The changes to the relevant links between the capabilities provided by the ERP MRO solution and the CMS publication solution can be handled via a documentation link. Since OEM information is based on a subscription, the changes will at first come through the airline or operator.

For most independent CMS services, the OEM data comes from the airline. “IDMR, for example, does not own the OEM data, so we provide a platform for

The screenshot displays the CORENA IPC software interface. On the left is a 'Table of Contents' for document 32-41-12-01, listing various aircraft systems like 'RIGHT WHEEL', 'PLACARDS AND MARKINGS', 'AIR CONDITIONING', etc. The main window shows the document title 'WHEEL INSTL WLG WHEELS 1-8' and a table with columns for 'ITEM', 'PART NUMBER', 'DESCR', 'NOMENCLATURE', and 'EFFECT'. The table lists a part 'L3245098400000' described as 'WHEEL AND TIRE ASSEMBLY'. To the right is a 3D CAD model of a wheel assembly with callouts 'A' and 'B'.

the airline to import and reconcile it,” explains Revivo. “When the airline receives a revision from the OEM, our solution allows for a side-by-side comparison and the ability to quickly reconcile.”

In the case of AeroSoft, Kaponeridis adds: “The content is received by the airline and CMS/DigiDOC ‘experts’ then process it to review, import, load and publish it within the airline’s systems and make it available for all the digital/online consumers (people or programmes) of this information.”

## Authorities

Although regulatory authorities do not play a part in the CMS selection process, there will be some interest into specifics relating to any major changes of procedures around work practice. This may include changes as a result of the adoption of mobility, or the revision control of newly adopted documentation handling, for example.

“Most regulatory authorities appear to not have a direct influence over CMS software, other than the requirements set out in AECMA 1000D (an international specification for technical publications), which in turn defines a common source database for the management and publication of technical documentation,” explains Louw.

In general, though, authorities only want to see the results of the procedure changes, rather than scrutinise the new software. They therefore focus on reducing the risk of regulatory authority non-conformance.

“The main focus for the airline is on ensuring continued airworthiness and this is the primary reason that M&E and

CMS IT systems were developed,” adds de Bree. “The fact that the resultant technology can also be applied in a manner to improve efficiency is a bonus.”

## Consultancy and support

As more operators and MROs are moving away from the traditional paper method of having only ever authored in word and printed in PDF, selecting the correct M&E system and or CMS service provider requires people that understand the benefits and shortfalls of the process. There are good, bad and better decisions to be made depending on what the company wants to do with the selected system in the future.

EXSYN has a consultancy service called LifeSpan, which assists in sourcing the correct M&E and CMS support.

“We would ideally like to be involved in the selection process at EXSYN,” says de Bree. “What we see, however, is that the airlines contact us and start to contract our solutions once they have made their software selections. They are now moving into the implementation phase.”

“Of course you need a tool to make sure the process runs as smoothly as possible and not to ‘shop’ too quickly to get a solution for a business decision,” continues de Bree. “EXSYN approaches the selection phase by using a ‘Value Stream Map’ session with all parties involved to identify areas of process ‘waste’ and bottlenecks within the company, and to identify and map areas for improvement. The first thing any company should do is invest the time and effort to synchronise their business processes so that everybody knows exactly how the business is run, and what

CMS IT systems have to handle documents in varying formats and standards from the OEMs. The revisions of documents from the OEMs can be issued to text, task and sub-task numbers, illustrations, part numbers, maintenance intervals, tools and skills.

is required from every person at each step of the process. I always see an IT tool or a maintenance management tool as a way to improve operations. What you often see is businesses taking too quickly to the tool itself, and not spending enough time on the processes behind it.”

Additional IT support services are also available to airlines and MROs after the software implementation process. “At EXSYN, over time we noticed that a lot of the airlines that subscribe to EXSYN’s variety of solutions were largely airlines that work with AMOS,” notes de Bree. “So we started to build up quite an in-house competence, and started to capitalise on the knowledge by offering first-level support to those airlines working with AMOS.”

## The future of the CMS

Two seemingly identical A320 aircraft by title could, on closer inspection, have different engines fitted, different internal configuration designs and component configurations, and varying avionics systems installed. It is therefore very important that CMS software presents the user with the right content at the right time. By taking some of the complexity away from the end user in selecting the right information, it will lead to a safer and more productive environment.

“We see using augmented reality as a game changer at Flatirons,” says Saunders. “This could be through a tablet or some sort of augmented reality-enabled headset that uses images of your surroundings to express the way you are selecting your aircraft, rather than text.”

“There are lots of different ways we think that augmented reality is going to enable better user interaction going forward to get the right information,” adds Saunders. “Additionally, in the future it may be possible that if I want to check the validity of a part, I can take a picture of it, compare it to a 3D module, and if possible produce a replacement item on a 3D printer.”

As with most selection processes, the time spent on the preparation and evaluation of the system selection is the key to its further success. **AC**

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