WELCOME

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44 - The S1000D User Forum Review

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Issue No. 5.0

S1000D

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TECH DATA WORLD

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Q3 as we enter conference season - the TDW van racks up the miles! Follow the TDW van on Instagram.

Background image taken whilst Mike was out and about on the road.

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S1000D User Forum is hosted in London

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TDW delivers multiple FREE YouTube tutorials on CMP, PM, DMRL and more

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MRO Europe was held at Excel in London - Mike pops over to meet a couple of clients

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TDW contracted to write a white paper for a client on an excellent topic, leveraging the S1000D Process Data Module

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Multiple TDW supporters renew their membership for 2020

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WELCOME

TechData

What a quarter! Our feet have barely touched the ground. Claire and her team have been maxed organising this years TDW-Live event, making sure that you all have booked your rooms and that you all have some nice goodies in your delegate bag for when you arrive. We look forward to seeing you all at the years event, we hope that the theme this year will give us all food for thought.

Personally, I have been delivering multiple training and consulting sessions, lots of travel which of course means lots of hotels and nice food, often too nice! I have spent a great deal of time answering a load of questions that have come into us here at TDW and as always, we really appreciate your valued feedback on what we are doing.

As always, the back-end of the year sees a number of key industry events, from DSEi and SCS to the S1000D User Forum and MRO Europe, all being held within a few weeks of each other.

I was lucky enough to meet a number of you at the S1000D User Forum in London (full report inside) and we shared some ideas, challenges and of course a few beers. I did manage to get to the Support Chain Seminar and whilst in London I did meet some clients over at the MRO Europe show.

The end of 2019 does not look like it will be slowing down, I am currently writing this introduction in my cabin aboard a ferry over to mainland Europe where I am heading across to deliver two separate S1000D training courses and we have already taken bookings for training in January 2020.

I want to thank all of you again who are sending me your love of what we are doing and how we are doing it. The S1000D User Forum blew me away with the number of people who came up to me saying that you watch my videos, this is truly humbling, and I am glad that you enjoy the way we deliver this content.

We are working on a number of new items here at TDW one of which we will be announcing at this year's event and for all of you involved in the commercial air sector, this will be for you! If you are not able to join us in person at the event, we do have a new online ticket that was requested, and

Michael Ingledew

FOLLOW THE TDW VAN ON INSTAGRAM

My details

you can join us virtually. You can learn more on the TDW-Live website.

Finally, over the last few months I have received feedback that our network has missed the 'on-the-road' type blogs, so we will reintroduce these where possible. A number of you have said you enjoy seeing where we are in the world, so I have also taken the decision to change the style of the magazine in the next issue - we will be dropping the cartoon cover to a photo from our travels! I hope this works for you all. (to be honest I am slowly running out of ideas for cartoons!)

Thank you for your continued support, the feedback tells us that we are doing what you want and need, and we will continue to deliver.

From a slightly swaying cabin on the ferry!

Mike

S1000D - What were/are your objections?

AT TDW we are not afraid of the tough questions and one of the toughest is around the motivations both for and against the use of S1000D, does it actually deliver any benefit and if so where is the benefit delivered, how and can it be measured?

We all know that it takes a momentous mind-shift to move towards an S1000D based technical publications strategy leaving 'traditional' publications mindsets behind. Not only is there a shift in thought processes, there is significant investment in infrastructure, tools, skills and most importantly time.

Anyone outside of the technical publications domain and often responsible for investment budgets will ask the very basic of questions often starting with the 'why' of S1000D, what do we get and why does it cost so much?

This is where the problem starts, we are all often left making up responses that we feel are right. We all produce technical publications for the same reason, it is just our methods of production usually differ for various reasons and motivations.

This is why we at TDW have embarked on a study around the use and adoption of S1000D - we are specifically interested in the objections to adoption as well as the motivations for those that have embarked on an S1000D strategy.

We are asking questions like "Why are you using S1000D?". Knowing the responses will vary from 'because our customer wants it' right up to 'we think it will solve our publications problems'.

We have designed the survey to take you less than five minutes and we have already had a number of significantly interesting responses from major suppliers and manufacturers in the S1000D user community.

A STUDY INTO THE ADOPTION OF S1000D - WE NEED YOUR OPINION - IT COULD HELP SHAPE THE FUTURE OF TECH PUBS IN OUR DOMAIN

Confidentiality of Response

We accept that the responses are highly sensitive and already we have had some 'frustrated' and angry responses - **your response is 100% confidential**, we will not share or publish your company, name or any information that could identify you from your response. Your response will be used as part of a collective to illustrate motivational trends for and against the use of S1000D.

What will we do with the statistics captured?

Our intention is to produce a White Paper and publish it in a future edition of this TDW Magazine.

How to take part in this survey:

Download the TDW app and follow the instructions to submit your response

Scan the QR code below and take part.

Scan me

THE BIG QUESTION

AR v IETP IS IT A BINARY CHOICE?

At TDW we are asked questions all of the time, some inspire us to create tutorials some make us smile – in the big question we take a closer look at your questions and give you some more food for thought.

A major part of the TDW working day is advising clients on the right tools for them and their organisation. Often the obvious (and not so obvious) questions are missed and quickly the decision that was made turns into a bit of a nightmare.

In the world of modern information production we are now pretty much all on board with current interactive manual delivery methodologies. This may be anything from a simple HTML type viewer to the more complex bespoke developed viewing systems that many of the heavy hitting software companies have and continue to develop.

With Industry 4.0 our attention is now being drawn to newer techniques for information deployment and content access routes, the most obvious being Augmented Reality (AR).

All major brands are now looking at how, not if, not should, but how they can deliver AR capability at a price point that makes sense for their deployments, users and products.

This got me thinking about a discussion I was having with a client of mine who was looking at converting old paper based manuals to an interactive 'modern' deployment. The question that kept coming up was 'but should we not just go fully AR?' and I asked the question, "why do you see this as a binary choice?", which was promptly followed with silence, a moment of gentle contemplation and then a 'don't know!'.

The reality from the market is if you look at a great deal of our domain messaging it is incorrectly being positioned as a binary choice.

Bells and whistles with AR **or** standard IETP deliveries, and this is not the practical reality or what is a sensible route for many organisations.

What are wider markets doing to bridge the gap from what a user is using now to where we want a user to be?

How do we satisfy current user needs whilst adopting what the next generation engineer expects and delivering deeper engagement, deeper product satisfaction and so on.

Let me tell you a little story.

Recently I attended a football match (soccer for those of you who prefer), Bristol City v Middlesbrough. Yes, I am a long standing and tortured Boro fan and I fancied a trip away to Bristol to watch my team 'show up', we're not particularly good at the moment, but I digress and it's far too painful to put into words.

Traditionally, spectators (users) are able to purchase a paper-based (printed) match programme, this contains welcome notes, team stats, sales stuff and more importantly it's a little memento of the day out. Nothing mind blowing or indeed earth shattering here. But, what was really interesting was the fact that the programme itself and match announcer were encouraging spectators to download a team AR app - the team app allows you to access more deeper content from the printed programme, but in a more engaging way, not in an either/or way but as-well as way. The user downloads the Bristol City AR app, points it at various locations of the programme and voilà, additional engaging content jumps out from the page. Video interviews with team players, pre-match announcements that were not available at the time of print, interactive adverts and so on.

This (yes even at the football) got me thinking tech pubs, why are **we** treating these two environments as an either or scenario when we should be treating it in the same way as brands like Bristol City are already doing?

Coming back to our IETP environments, of course many IETP providers are attempting to **include** or build in AR capability **into** their viewers, all with a varying degree of success and most importantly usability. But I think

they may be attacking this problem from the wrong reality perspective or indeed how a user will want to continue to access content today and access AR content.

The problem with an IETP implementation, this forces us again into a binary choice, paper/PDF or IETP with AR. This is not enabling technical publication teams to make a sensible decision, it actually drives many away from even considering technology just like AR.

Introducing the companion app!

Why are we not developing apps that are used by those that want to use AR capability that supports both traditional (print/PDF) **and** current IETP deliveries?

If we have a deployment that is PDF/printed/paper-based, they can still have an AR app, if we have a deployment that is IETP based, you can still have the same AR companion app. The current method of IETP deployment is an either or, a sensible approach would be an enabling as-well-as.

When I think about this more and more, I actually believe that manual 'companion apps' are the way to go and I have already suggested this to many technology companies I support.

It means those seasoned users that access information in a traditional way are able to continue to do so, but those newer, more tech savvy users wishing to access deeper, richer content are able to do so also. Same content different and deeper access methodologies, addressing the needs of all users without having to force one or the other to up-skill or indeed down-skill which is more common than you may think.

The more I thought about it, the more this makes sense to me,

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developing technical manual companion apps that support **existing** deployment methods. This is a gentle entry route into AR and at a price-point that does not require us to invest huge amounts into complex deployments.

I set myself a challenge

How can you achieve this? How can you do this that is affordable and uses the same content, paper, PDF, IETP and also deliver deeper content?

I set myself on an AR quest, I took some paper content that I found for an old Morris 1100 1970s vehicle and asked myself 'how can I add a video to this content as is?' - Step-in YouTube, some excellent tutorials, some free-to-access software and within **45 minutes**, I had developed an app that worked on iOS and Android that will load a video when pointed at a specific image contained within the printed technical manual. I was actually very surprised how easy it was to create a simple, usable and low-cost AR solution with little-to-no AR skill!

That is why at this years TDW-Live event I am going to show what I did, how I did it and how much time and energy it took me! Join me at TDW-Live and I will show you the processes


that I went through to develop a very basic yet functional AR App.

Finally

For those who are desperate to know, we drew the game 2-2 with Bristol City and the day was not as painful as we had anticipated. However after the Bristol City game, we have been dreadful and the pain is very real!

Simple AR applications are easy to achieve and develop with little know-how - image shows a screen presented PDF file being extended with video via AR
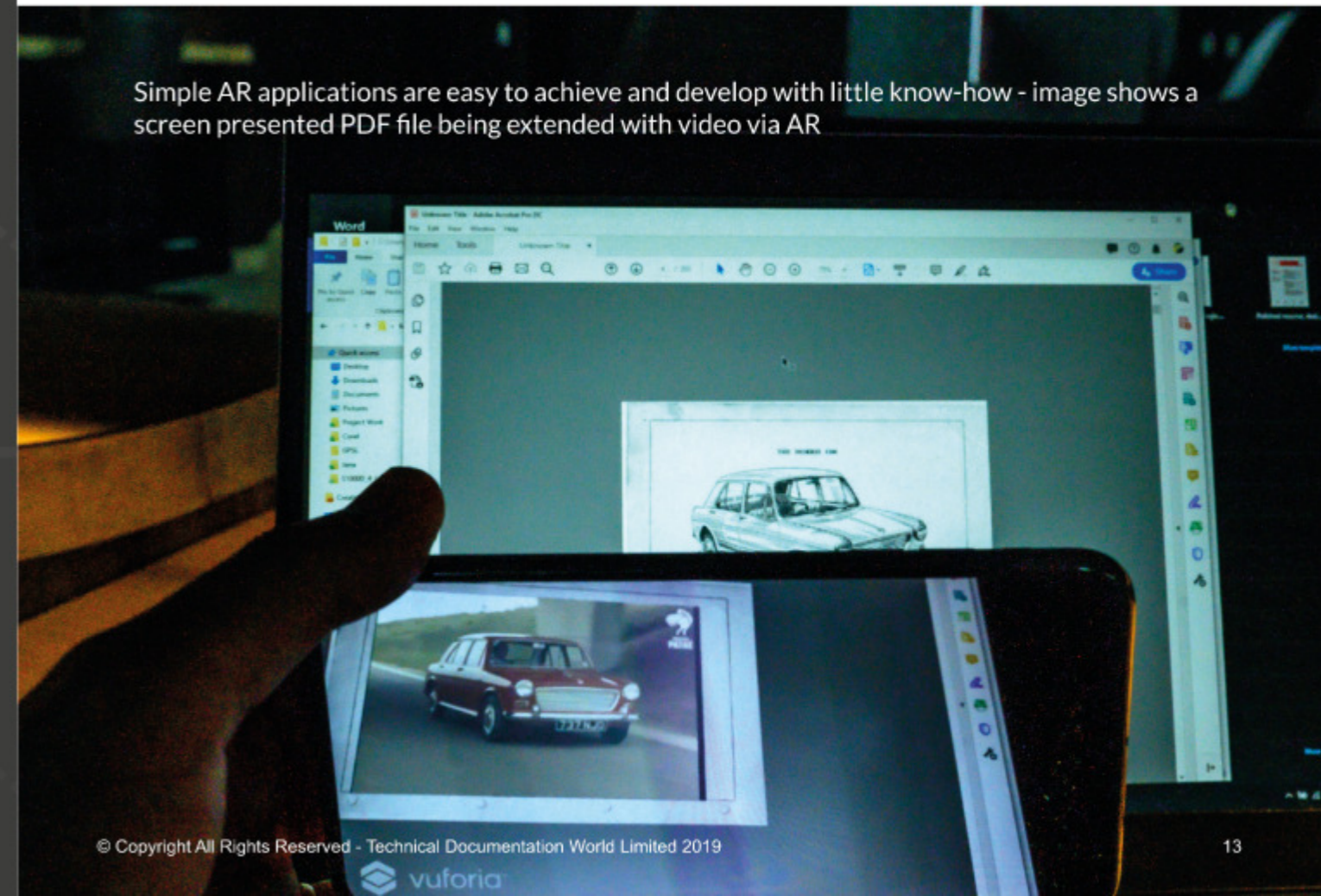
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ASD-STE100 SIMPLIFIED TECHNICAL ENGLISH (STE) BASICS 2: VERBS

Ciaran Dodd

As part of my two-day Introduction to ASD-STE 100 Simplified Technical English course, we review some essentials of grammar that you must know to understand the rules of STE. In the next few articles, I will:

- describe these essentials of grammar, and

- explain why you need to know them to write well in STE.

In this issue, we discuss verbs.

STE BASICS 2: VERBS

What is a verb?

The STE specification defines a verb as:

"**verb (v)**: A word that describes a state of being or an action. Its tense (present, past, future) tells you when the action occurs." (2-0-4, ASD-STE100, 2017)

There are two main categories of verbs: **main** and **auxiliary** (helping). Main verbs stand alone, and auxiliary verbs go before main verbs to express possibility or obligation (*might or must*). The category of main verbs splits into action verbs (*do, put*) and state verbs (*be, have*). Different verb forms can express the time an action takes place (tense) or who or what did the action (voice).

In English grammar, the rules on verbs are complex and many rules do not exist in other languages. For these reasons, STE simplifies the verbs that you can use and how you can use them.

Verbs in STE – what you need to know

1.   Some words can be verbs and another part of speech, like a noun. For example, we usually use 'damage' as a verb, but STE permits 'damage' as a noun only. You need to be able to categorise a word as the correct part of speech in the context of the sentence that you have used the word.

2.   Some words can be technical verbs if you can fit them in to an appropriate category, for example a manufacturing process. Again, you need to know if the word that you want to use is a verb to do this.

3.   Section 3 contains the rules on verbs and how to use them in STE. Technical verbs must also follow these rules. Section 3 tells you which forms of verb you can or must use: infinitive, imperative, simple present, simple past, past participle as an adjective and future tense. For example, you start procedural steps with a verb in the imperative or command form: *Install* the filter.

You cannot use the -ing form of the verb unless it is part of a technical name or the title in a procedure. So, you cannot write: When cleaning the filter…, but the title of the procedure could be: Cleaning the filter.

4.   STE prefers the active voice: *A hit B* rather than *B was hit by A*, which

is the passive voice.

5.   Safety instructions (such as warnings and cautions) must start with a simple and clear command, so again you need to know the command form of verbs.

This summarises the key uses of verbs in STE. There are rules on verbs in many of the 9 sections of rules. Therefore, it is important that you can define a verb and apply the relevant rules to write correctly in STE.

Next month, we discuss nouns.

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WHAT DO YOU THINK ABOUT
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Announcing the latest version of the International Specification for the production of technical publications - S1000D usually creates a bit of a stir, but did it this time around?

Issue 5.0 of the specification was formally released just in time for the S1000D User Forum in London. The features that were announced as key highlights were not as industry world shaking as previous releases of the specification, let's look why.

An interesting change for me is the introduction of the new Information Name Variant. This new optional element has confused some and delighted others. To understand the reasoning behind the introduction of this new element you really need to understand the challenges

that large multi-supplier projects face as well as those projects that can quickly run out of Information Code definitions, and yes there are some out there. *Tutorial to follow on a use case for the new element.*

Other changes included the removal of the use of certain ISO characters in the Information Name for modules, I have to say I was a little surprised by this one, we are dealing with XML content, surely if we correctly identify ISO characters in our XML then they should be handled appropriately by software and checking tools? I remain to be convinced that this was not an addition to cater for specific software tools or lazy authoring, I just can't make up my mind.

There was also minor changes to the S1000D defined SNS structures. The addition and redefinition of some Information Codes are a small but nevertheless interesting change. The addition of a new 'Flush' IC made me chuckle, we've been 'flushing things' for years, why it hasn't been identified before as a deficiency in the specification is surprising.

The introduction of the new Regulatory Information is all over the spec, those projects that need to use this vital capability now have maximum opportunity and flexibility to do so and is the noticeable addition to the spec in

multiple areas.

The spec has been tidied up, minor grammatical changes, corrections and updates to the specification itself as well as corrections to multiple Schemas.

An excellent example of the connection and inter-dependency of S1000D on other external and supporting specifications, is where the IPD schema has changed to accommodate changes to the S2000M specification.

The standard Bike Data set has also been updated to reflect the changes in 5.0 for those of you who want to get down and dirty with the XML - you can download the entire package from the S1000D.org website.

All in all it is not an earth shattering update to the specification. This update includes

many fixes and tidy-ups, and the addition of some nice little options.

Watch my the Tech Data World YouTube channel for more short sharp tutorials on what you can gain from the latest version of the S1000D specification.

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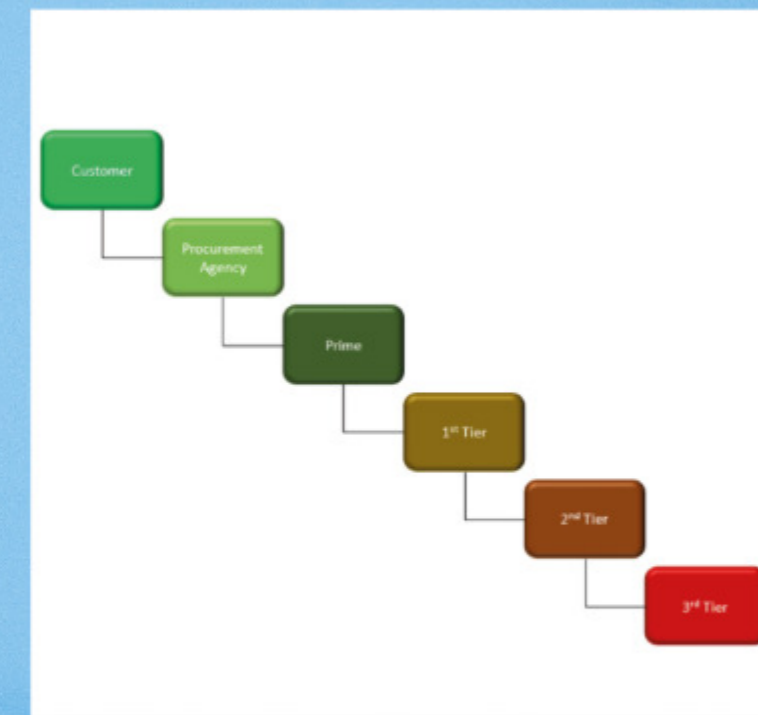
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CAVEAT EMPTOR

FIG 1 - A SUPPORT ENGINEERING CONSTRUCT

Support Engineering is a topic that people just don't seem to get. At its heart it's a pretty simple concept - common sense even - if you're going to invest in a capability then work out how you're going to keep it…well, capable (and how much is that going to cost).

Caveat emptor is the principle that the buyer holds the responsibility for checking both the quality and suitability of goods before buying them and Support Engineering is the name given to the discipline charged with checking the quality and suitability of capabilities on large procurement programmes.

We do it in our everyday lives. I recently had a conversation with a friend who, for this exercise, we'll call Dave. Dave was due to sell his car, he made the choice to replace a tyre prior to listing the vehicle. The reason is, that Dave knows that the car eats through tyres like a hungry caterpillar through a picnic so, to avoid a potential buyer spotting some wear on the tyre and then asking how quickly they wear and then asking how expensive they are, he removed the evidence. You see, as a (grown up) buyer, we understand that being able to afford to buy a car is not the same as being able to afford to keep

LEE FITZSIMONS
ASPIRE CONSULTING

LEE IS A PRINCIPAL CONSULTANT AT ASPIRE AND IS THE PRODUCT MANAGER FOR RCM, TNA TECHNIQUES AND ASPIRE'S SOFTWARE PRODUCTS. A FORMER RAF AIRFRAME TECHNICIAN, LEE HAS PERFORMED AND LED VARIOUS ANALYSES ON FIXED, ROTARY AND MARITIME PLATFORMS.

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the car and we need to better understand the associated costs before committing.

Support Engineering answers those exact questions just on a slightly grander scale. It might not be easy, but it certainly isn't rocket science.

Before I go further, the phrase Support Engineering construct isn't in common parlance but will appear throughout this article. It refers to the hierarchy of organisations, from the operator down to the second/third tier suppliers, who contribute to the engineering of support for equipment.

There are two types of Support Engineering constructs; there a planes and there are helicopters. As Harry Reasoner put it…

THE THING IS, HELICOPTERS ARE DIFFERENT FROM PLANES.

AN AIRPLANE BY IT'S NATURE WANTS TO FLY, AND IF NOT INTERFERED WITH TOO STRONGLY BY UNUSUAL EVENTS OR BY A DELIBERATELY INCOMPETENT PILOT, IT WILL FLY.

A Support Engineering construct that is owned, led and behaves correctly is like an aeroplane, it just wants to fly. All of the cogs in the system

are in harmony, optimised and it just works. Support Nirvana.

Reasoner continues…

A HELICOPTER DOES NOT WANT TO FLY. IT IS MAINTAINED IN THE AIR BY A VARIETY OF FORCES AND CONTROLS WORKING IN OPPOSITION TO EACH OTHER, AND IF THERE IS ANY DISTURBANCE IN THIS DELICATE BALANCE THE HELICOPTER STOPS FLYING; IMMEDIATELY AND DISASTROUSLY. THERE IS NO SUCH THING AS A GLIDING HELICOPTER.

A Support Engineering construct that will still fly but it doesn't naturally want to. All of the elements seem to work for and against each other at all times and it is a single misstep away from falling apart. Sadly, this is nearer the Support Norm.

WHAT MAKES YOUR SUPPORT SOLUTION A HELICOPTER AND NOT A PLANE?

Hopefully by now, you've figured out that you want to be the plane, I've never met one though. Instead I've met many helicopters. There are a few reasons for that but, for the sake of this article, I'll focus on two:

- Ownership;
- Leadership.

These two things - or getting these two things right - is what makes the difference and they are the two most common themes that can be found wanting in Support Engineering constructs.

There is an unhealthy focus on 'buying and administering' rather than 'owning and leading' and the way that that manifests itself, though

AN AIRPLANE BY ITS NATURE WANTS TO FLY

different across each project, is similar.

I once saw ownership described as 'a driving force of accountability' but, in Support Engineering we don't often see it. What we do see is a lack of ownership leading to outsourced accountability and abdicated responsibility. Support Engineering constructs where communication between the organisations is transactional, through the exchange of contracts, rather than relational, through open dialogue and shared values.
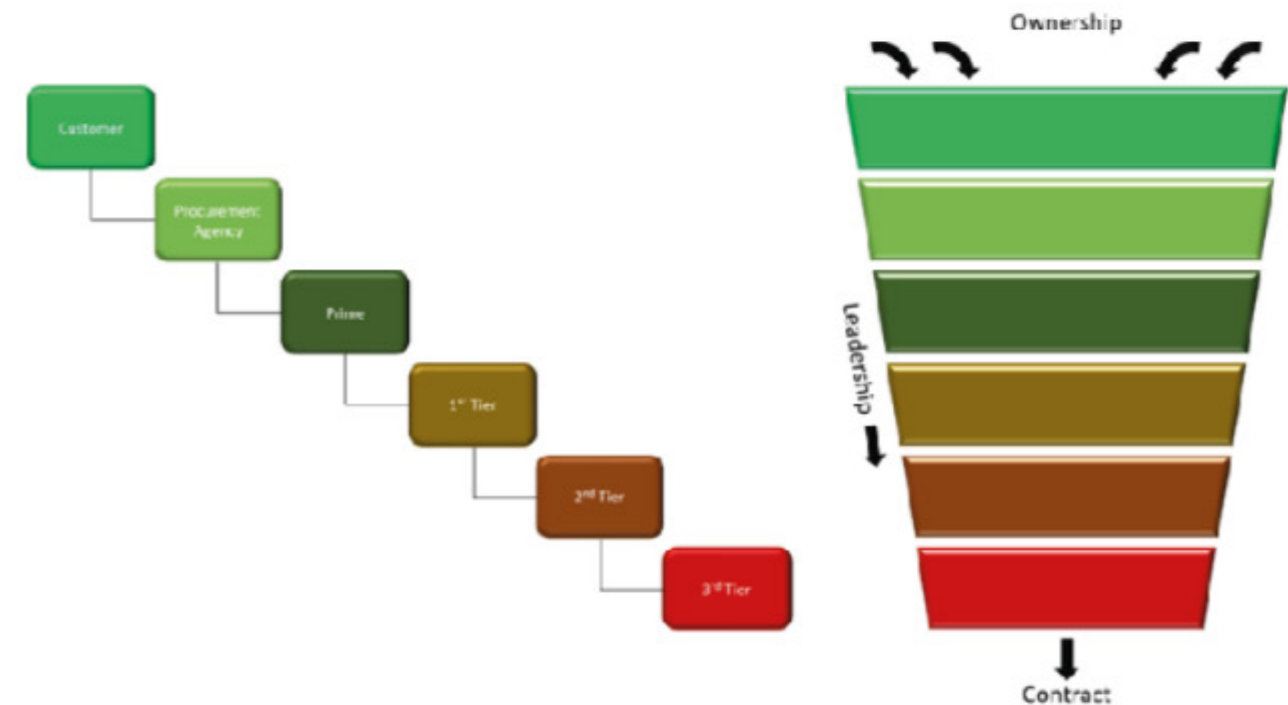

Fig 2 - OWNERSHIP AND LEADERSHIP FILTERED DOWN TO CONTRACTS

If ownership is responsible for setting outcomes and goals and committing to their achievement, then leadership is responsible for inspiring the stakeholders to achieve it. If ownership is absent, or diluted, then effective leadership becomes far less likely which means that those lower-tier organisations in the supply chain, which don't usually have the specialist skills, knowledge or experience to produce Support Engineering data, are still expected to know and understand what it is all about.

They don't, of course, and therefore often have to invest in outside help from consultants - at a cost that is often disproportionate to the value of the kit that they are providing.

WHAT DOES ALL THAT MEAN FOR SUPPORT ENGINEERING DATA?

Before I answer that, a word on the Data, Information, Knowledge, Wisdom (DIKW) hierarchy which is a method of describing the journey that data must go through in order to become actionable. The best diagram that I've found to describe the progress is included below and originates from an article which can be found at this url **https://electronics360. globalspec.com/article/4890/optimal-analysis-algorithms-are-iot-s-big-opportunity.**

Data refers to multiple signals, datum points that are plentiful but essentially meaningless. Data know nothing of each other. For data to be useful, it needs to be transformed and we do that by weeding out its relationships and its structures or, more succinctly, by adding context to that data which transforms it into **information**. Adding meaning to information like giving it a specific focus or asking a specific question, further transforms that information into **knowledge**. Data, information and knowledge are the evolutions that data must pass through that allow us to understand what is or what has been. It is, by definition, actual and retrospective but for data to have a point, we need to be able to apply learning

and understanding to it in order to use it going forward. In applying those things to data we transform it from retrospective to prospective, from knowledge to **wisdom** and from there it's a small step to apply that wisdom and to make good **decisions**.
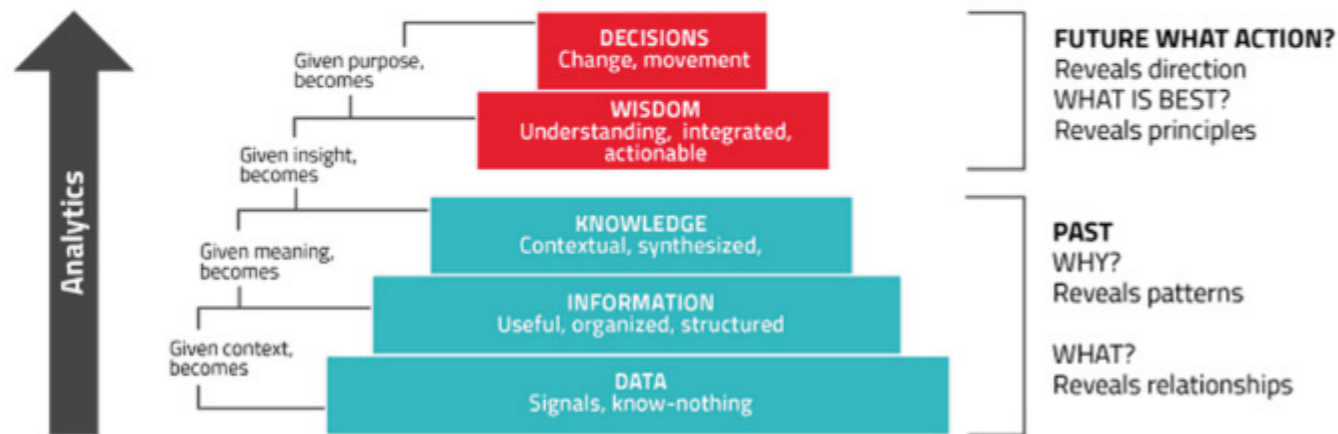

FIG 3 - AGT INTERNATIONAL'S DIKW MODEL

When you have to work with Support Engineering data, the lack of leadership becomes obvious, very quickly. Support Engineering data faces a single challenge, from which stem all other problems. Suppliers are contracted for information. That won't be what the contracts say, the contracts will ask for Supportability Plans and Supportability Data. It may say data but it's not what it means.

Look again at the DIKW model, what's the difference between data and information?

'THE FROG IN THE WELL KNOWS NOTHING OF THE SEA'

JAPANESE PROVERB

Context - the relationships and structures that frame the data and make it meaningful. Asking second and third tier suppliers, for example, to perform a failure modes, effects and criticality analysis (FMECA) that assesses the criticality of their products failure, on the final platform, is

ludicrous - they can't possibly know - but this practise is commonplace. That really is a job at platform or maybe even customer level and the perceived reluctance to perform such a role is probably the most prevalent indication of abdicated responsibility.

The other problem with receiving information is that it is difficult to manipulate. Usually in report or spreadsheet format, the information is swivel-chaired into a master database by other elements that need to use it. That's the best case, the difficulty in re-using the information supplied usually leads to other Support Engineering construct elements duplicating information, creating multiple versions of common data - which is an optimisation and configuration control nightmare. This 'disintegrated' support data is all too often simply piled together and presented as a disjointed, tick-box support solution. Somebody here, needs to act as an integrator, to ensure that the correct context is applied to the correct information.

It's difficult to quantify the cost the cost of having the wrong data, created at the wrong level and provided in - perhaps - the wrong format but imagine a programme as large as a maritime platform, for example, and consider the sheer number of suppliers involved. If these issues were to arise on a programme like that, how much would that cost and, more

importantly, how could it impact the ability to get the 'right' support for the capability?

It is absolutely right that every organisation in the supply chain, or the Support Engineering construct, is required to generate data for Support. That requirement needs to be reasonable though and it needs to recognise the important role that context plays in creating meaningful, useful data.

The answer is simple, someone - led by the customer - has to take ownership for Support Engineering. Proper, active ownership that permeates down through the tiers of suppliers - no, tiers of partners - through leadership. Leadership that recognises the limitations of each partner and inspires buy-in and the creation of good clean data. If you can support that leadership and that data creation with a tool that allows each element of the Support Engineering construct to access the data of their lower tier partners and add context to it (all the way up to the procurement agency

and the customer) so that, data is no longer transacted in reports or spreadsheets and is no longer duplicated but it simply re-used and enhanced by building context into each level until, eventually, wisdom prevails and there is an optimised support solution.

Earlier, I introduced the concept of Support Engineering constructs that are either planes or helicopters, with the former being the target. The helicopters are those Support Engineering constructs where ownership is weak, ambiguous or diluted and evidenced when looking at the manner in which Support Engineering data is created and handled. The planes are those Support Engineering constructs where ownership is strong and will be demonstrated by a Support Engineering data process that is clean, coherent and concise.

Strong ownership and inspiring leadership supported by appropriate tools. That's how to turn your helicopter into a plane or, at least, that's how you can make your helicopter glide.
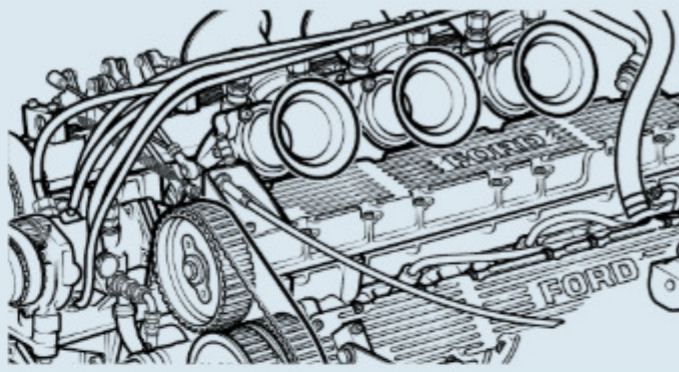

THERE IS NO SUCH THING AS A GLIDING HELICOPTER.

My Way
A basic guide to
Corel Draw -
Ellipses

As a traditionalist (dinosaur) technical illustrator I have a preference for the 2 and 3 point perspective illustration. Isometric has become the norm for parts catalogues and how to build flat pack furniture, but in my day to day work and hobby, military vehicles and race cars need to be drawn in perspective.

I prefer my line work in a style that represents old school Rotring ink pens and ellipse guides. Technical illustration is no longer being taught with the exception of a brief introduction to CAD designers using 3D modelling software which produce single line weight images.

Now an insight into how I Do It My Way -

This is a basic tutorial on how I create my technical illustrations using Corel Draw X8. There are other vector drawing applications out there. Most of you will know Adobe Illustrator which is good but having cut my teeth in 1994-5 from drawing board to pc my employer choose Corel Draw (in those days a PC and Corel Draw were cheaper than a MAC and Adobe Illustrator). Over the years, Corel Draw has become a much more versatile application with the ability to Import 71 file types and Export 49 file types. Adobe Illustrator Exports 8 and Imports 27 file types as a comparison. When creating a technical illustration, there are moments when I will use Adobe Illustrator for certain items and I will cover those in articles to follow.

Straight lines are necessary but curves make an illustration more interesting.

My personal favourite reason for using Corel Draw has always been the ellipse tools.
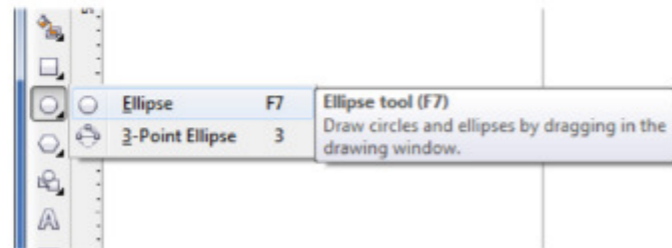
Corel Draw creates an ellipse which is editable and remains so. The object has just one node compared to the 4 nodes on an Adobe Illustrator ellipse/arc. For comparison, when such objects are exported as cgm. file types they have multiple nodes which are a series of small straight lines giving the appearance of a curve until the viewer zooms in.
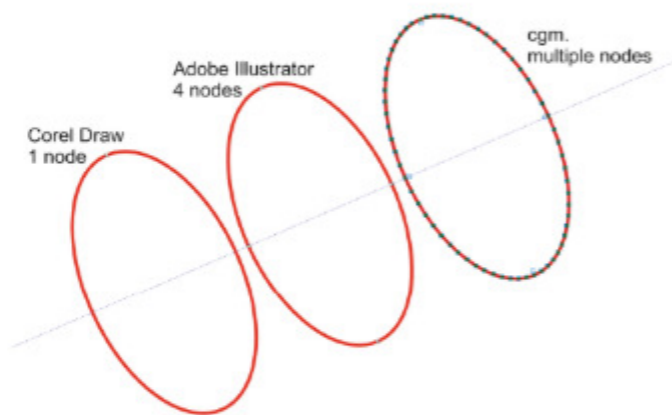
The single node can be dragged around to create part ellipses/arcs and pie segments depending whether the cursor is inside the object or outside the object. See following

diagram.

Once the ellipse is created and the node moved to create an arc, at any time later the circle/ellipse can be adjusted back to a complete circle/ellipse or smaller/larger arc, just by moving the single node or using the circle/arc properties boxes in the top menu.

Not all illustrations are 2 dimensional, so this is where the 3-Point Ellipse tool comes into it's own. You could use the Ellipse tool and create a vertical cylinder for practice, but not everything is straight up and down.

Place a guideline, either a guide line rotated or draw a path as the minor axis. Select the 3-Point Ellipse tool. The start and end points will be determined from references or the legacy illustration or the photograph being traced.

Click the start point, drag the cursor to the end point, release mouse button and drag the ellipse out to the desired shape. The angle of the ellipse depends on the distance between the start and end points. The larger the distance the rounder the ellipse. Example right.

After some practice on the ellipses, it is just a matter of creating a series of cylinders of various thickness and length, then combining several together and you can produce a nice technical illustration.
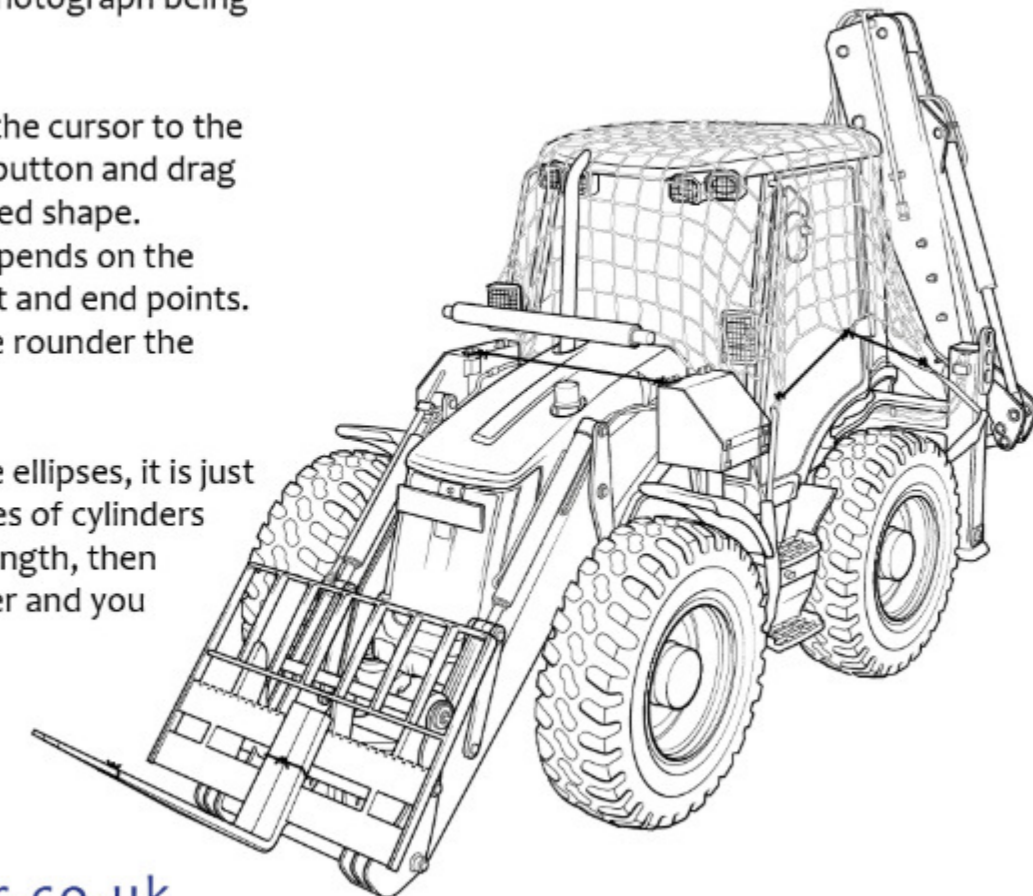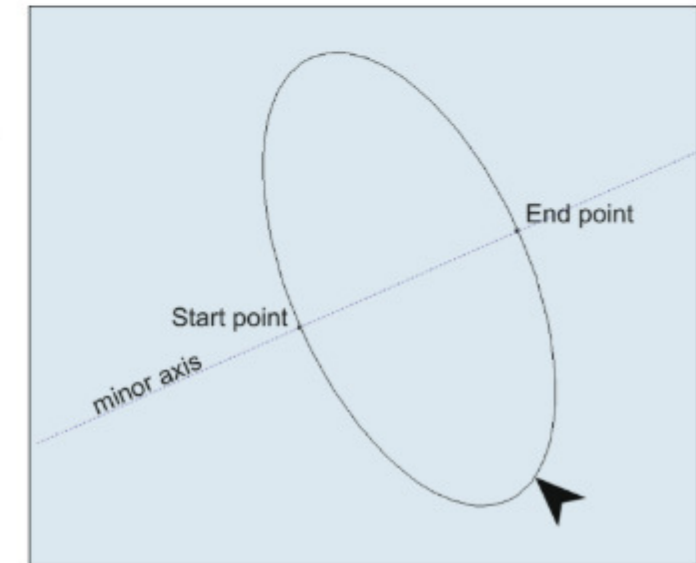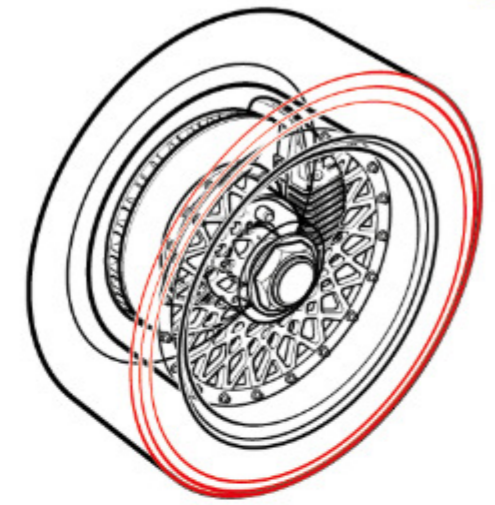
Below is my basic method for creating a cylinder using the 3-point ellipse tool.

1. Draw 1 ellipse and create 2 duplicates (Ctrl D), then move the second ellipse away.

2. Select front and rear ellipses and weld together (Arrange drop down menu/tool box).

3. Delete nodes A and B to produce sides of cylinder. Change outline colour of front ellipse.

4. Duplicate front ellipse, change outline colour, reduce size and offset position at front edge.

5. Select both front ellipses and combine (Ctrl L).

6. Add fill colour, remove outline and adjust size of object to cover cylinder outline.

7. Duplicate front object, reduce to desired size and flip both horizontal and vertical. Copyboard should still have original ellipse, so paste ellipse and re-size and position for rear hole. Using node tool adjust ellipse to show visible portion of hole.

8. I then convert the hole outline to an object (Ctrl, Shift, Q) and tidy it up if protruding out of front hole aperture. This can be done by manipulating the nodes or use the Erase Tool.
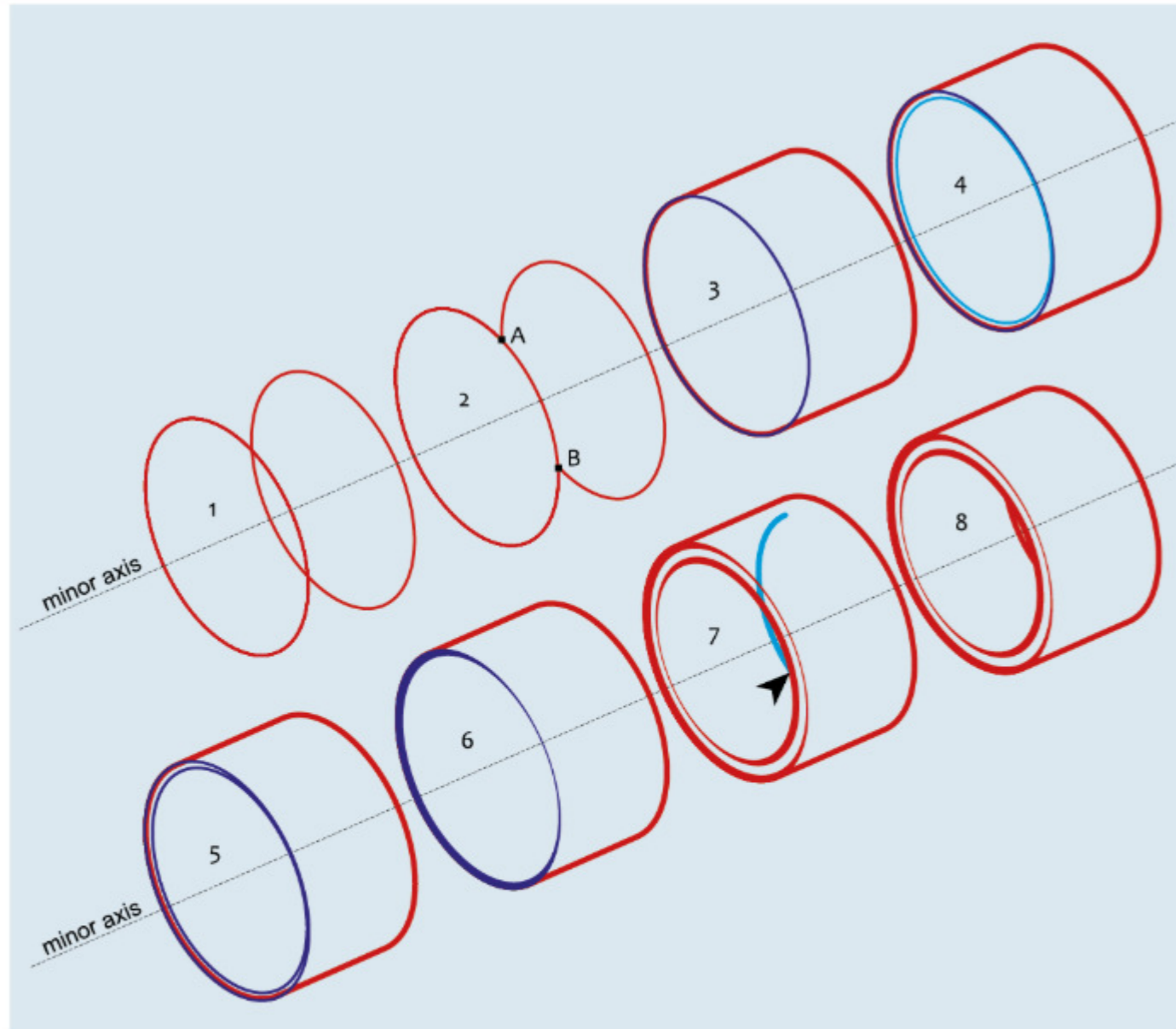
Part of exploded illustration, 3D Solidworks model, re-drawn as traditional line weights.
Xtrac BTCC gearbox
Roy Scorer 2013
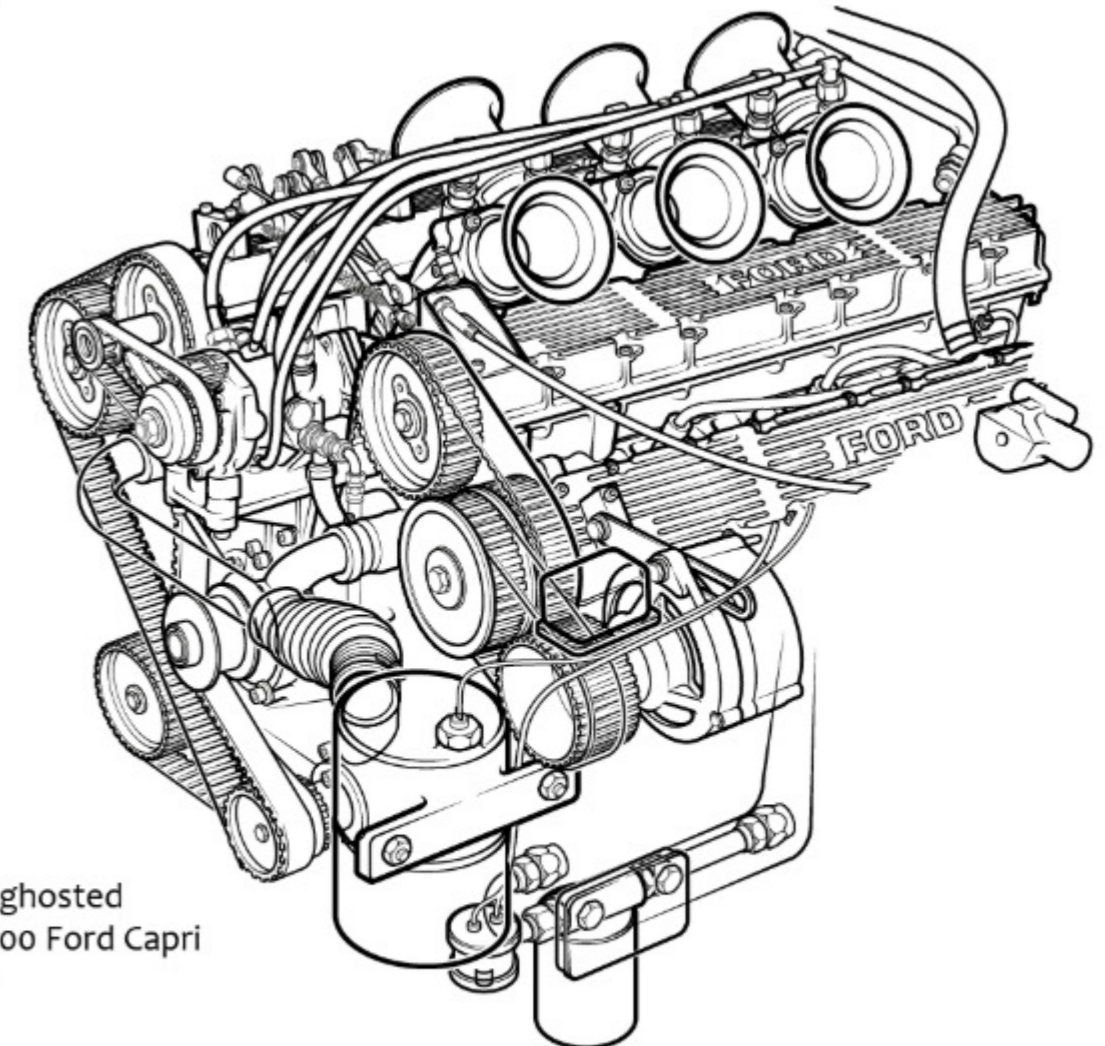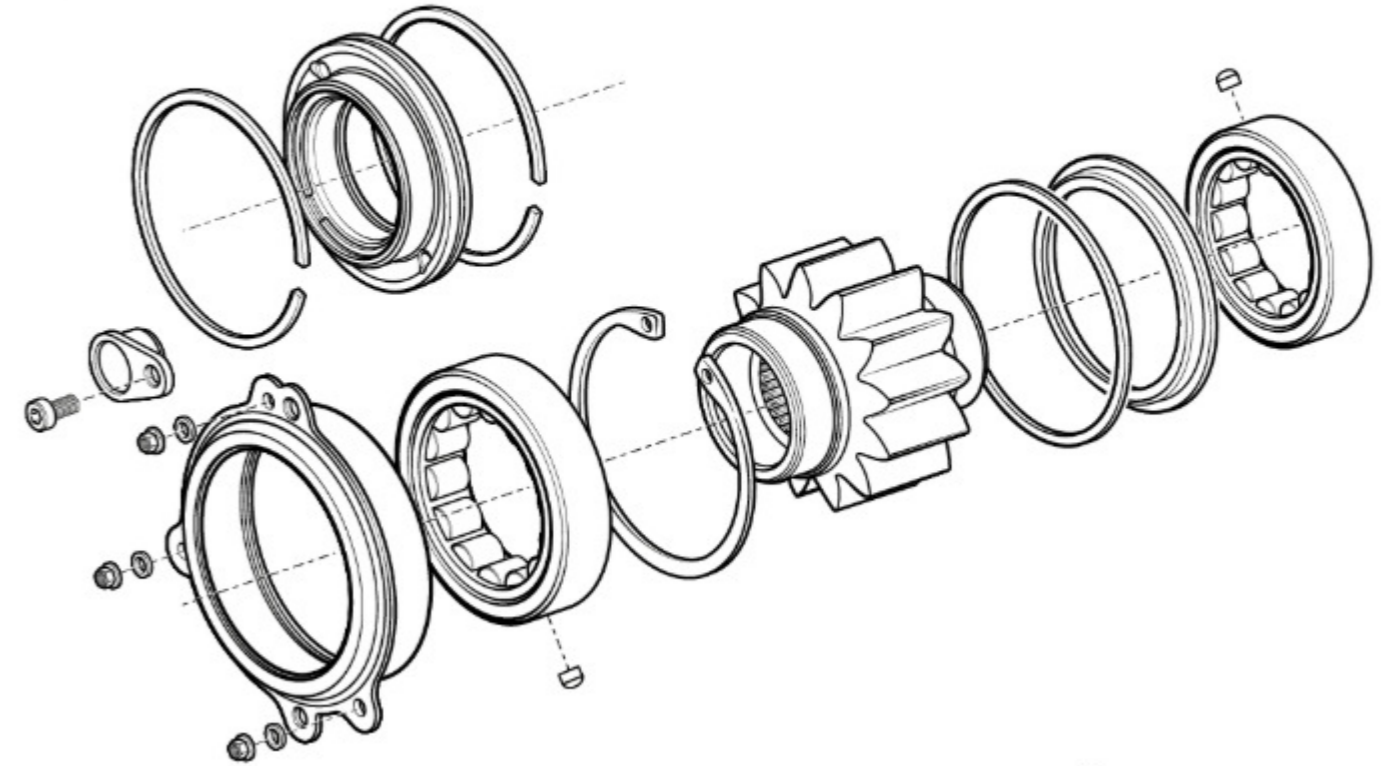
Part of cutaway/ghosted illustration RS 3100 Ford Capri
Roy Scorer 2017

PROGRAMMING THE PROCESS DATA MODULE INTRODUCTION

Dr Mike Day

In the last article, we designed a process data module in terms of the screens and dialogs that are needed for a component inspection and for data capture. In this article, we show how to create the data module in XML. To save space, I have omitted the XML for the standard stuff that is in every data module – for example the identification and status section. I assume the reader is familiar with creating the XML for that. In this article we concentrate only on the process data module features we require to implement the data module we designed in the last article.

GETTING STARTED - PLANNING

Recall from the last article that I recommend that you plan your process data module before you jump in and start creating the XML. Also recall that the process data module is made up of screens of information that flow from one to another - and these should form the basis of your plan. The planning document is shown in Figure 1 where each box is a Node which is a screen of information which will be represented in the XML with a **<dmNode>** element.
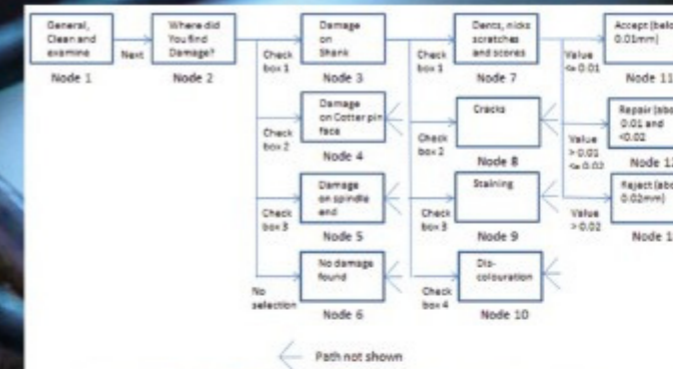
PROGRAMMING THE FIRST NODE (NODE 1)

Start in the data module **<content>** section with a data module sequence **<dmSeq>** and under this a **<dmNode>**. Give the node an identifier attribute that corresponds to a node number in your planning document. Note that in a **<dmSeq>** the **<dmNode>** are executed in the order they appear, unless a loop or if statement determines otherwise.

The first node is a straight forward screen of information with no dialogs to worry about. Coding this node is reasonably straight forward. It is simply made up of three procedural steps that contain titles, paragraphs and references.

Note that there is no tagging required for the Next button that is shown at the bottom of the node. This is done by the stylesheet for each and every node along with a Back button for all nodes other than the first. The mark-up and display for Node 1 is shown in Figure 2.

FIGURE 1 - THE PLANNING DOCUMENT FROM THE LAST ARTICLE

FIGURE 2 - NODE 1'S MARK-UP

PROGRAMMING THE SECOND NODE (NODE 2)

Create a second **<dmNode>** immediately after the first. This second node is shown by the IETP after the Next button is pressed from Node 1 (see Figure 1).

NOTE:
Only the first **<menuChoice>** is shown and the second partially shown, the third is omitted for space but is similar

FIGURE 3 - NODE 2 WHEN IT IS DISPLAYED

See the mark-up example in Figure 3. In the second **<dmNode>** which represents Node 2, enter a **<title>** element with the text value "**Where did you find damage?**". This will appear at the top of the screen when the node is displayed in the IETP. After the **<title>**, we see our first dialog which has three checkboxes. Place a **<dialog>** element after the **<title>** and enter a **<menu>** element in the **<dialog>**. In this case we want the user to select none, one, or more than one of the available choices so we set the @`choiceType` attribute on the **<menu>** element to the value "multiple". If you wanted just one menu item to be selected, that is when you click a second checkbox the first de-selects, you would have set the @`choiceType` attribute to the value "`single`".

You have three menu choices to define – enter one **<menuChoice>** element for each of the checkboxes you need. Enter a **<paraBasic>** element beneath the **<menuChoice>** and enter the text of the checkbox in it. Note that we have figure references in the menu items but **<paraBasic>** does not allow **<internalRef>** elements and therefore these are entered as text. This is a shortcoming of the process data module Schema and you cannot expect an out-of-the-box stylesheet to treat these references as hyperlinks or hotspots. To make the text work as hyperlinks, our stylesheet operates on patterns found in the **<paraBasic>** elements and we have to make sure that the author enters these consistently.

Note that you now need variables - one for each of the menu choices. In this case, I have given them sensible but rather long names as you can see in the example mark up. The convention I have used is variables are identified by their type where b = Boolean (`True or False`), r for a real number (eg `0.12`) and s = string (text) followed by the Node number (from the planning document) and then the text of the option. You can however call these variables anything you want.

These variables have to be declared. I got into the habit of declaring them as I entered them into the mark-up. This is good practice as the process data module probably wouldn't work in the IETP unless you do this and the Schema validation will not pick up the fact that you haven't declared the variables before you use them. This is why ideally you would have process data module editor software that keeps track of the variables for you. I'm doing it the hard way by using a standard XML editor.

You declare your variables in a **<variableDeclarations>** element which must be placed before your first **<dmNode>**. For Node 2, you need three Boolean variables that will be set to the value "True" if the checkbox that it is related to is

selected when the node's Next button is pressed. You will see in the mark-up example that the values of these variables are set to the value "`False`" when the variables are declared. And in the **<menuChoice>** elements they are set to the value "`True`" if the checkbox is selected. The declarations are shown in Figure 4.

PROGRAMMING NODE 3 – DEMONSTRATING THE USE OF <dmIf>

In the planning document (Figure 1), you will see that Node 3 is only reached if the "Spindle Shank" checkbox is selected as this will set the variable `bNode2SpindleShankSelected` to the value "`True`". In order to make Node 3 appear only when the "Spindle Shank" checkbox is selected, use a **<dmIf>** element above the **<dmNode>** that represents the node we are linking to (Node 3 in the planning document). Refer to Figure 5.

In the Schema, the **<dmIf>** element contains a **<dmThenSeq>** and an optional **<dmElseSeq>**. In this case we simply need one **<dmIf>** with only a **<dmThenSeq>**.

You will need to use an **<expression>** element that evaluates to the value "`True`" if the variable `bNode2SpindleShankSelected` is set to the value "`True`". Expressions are probably the trickiest thing to define in a process data module as they are quite verbose in the XML. Figure 5 shows an expression that will evaluate to the value "`True`" if the variable `bNode2SpindleShankSelected` is also "`True`" (this is equivalent to "`if bNode2SpindleShankSelected = True then … endif`" in your favourite programming language).

In the **<dmThenSeq>** you can have any number of nodes you like and these can also contain their own loops and if statements. For our example we need Node 3 and its subsequent nodes (7, 8, 9 10 together with 11, 12 and 13) in the **<dmThenSeq>**.

Node 3 is only reached when the "`Spindle shank`" checkbox is selected, and this is controlled by the value of the variable `bNode2SpindleShankSelected` being the value "`True`" which means the checkbox was selected in Node 2. Note that the other

FIGURE 4 - DECLARING YOUR VARIABLES

NOTE:
If the **<expression>** under the **<dmIf>** is `True` this means the first checkbox above was selected and the **<dmThenSeq>** will then display its first **<dmNode>** with id="Node003".

FIGURE 5 – USING A <DMIF> TO MAKE A NODE DISPLAY

checkboxes from Node 2 will be marked-up in separate **<dmIf>** elements. The mark-up is similar for these nodes and so are omitted to save space.

For Node 3 You need a **<title>** set to the value "`What type of damage did you find on the Spindle shank`" a **<dialog>** and a **<menu>** with a @`choiceType` set to the value "`multiple`" with four **<menuChoice>** elements set to the values shown. You will also need four new variables in the **<variableDeclarations>** that are set to the value "True" if the relevant **<menuChoice>** is selected – `bNode3DentsNicksScratchesScoresSelected`, `bNode3CracksSelected`, `bNode3StainingSelected` and `bNode3DiscolourationSelected`. See Figure 6.

NOTE:
Only the first **<menuChoice>** is shown and the second partially shown, the third and fourth are omitted for space but are similar

FIGURE 6 - NODE 3 WHEN IT IS DISPLAYED

PROGRAMMING NODE 7 – DEMONSTRATING DATA CAPTURE AND <dmLoop>

Node 7 is the first data capture node and includes a loop. It will display only if the `bNode3DentsNicksScratchesScoresSelected` variable is set to the value "`True`". Therefore immediately after the **<dmNode>** for Node 3, we need a **<dmIf>** statement and an **<expression>** that evaluates to the value "`True`" if bNode3DentsNicksScratchesScoresSelected is "`True`". See Figure 7.

NOTE:
This shows the XML required to make Node 7 appear when the "Dents, nicks, scratches, and scores" checkbox is selected

FIGURE 7 - THE <DMIF> STATEMENT THAT MAKES NODE 7 APPEAR

For Node 7 we need a new variable of type real – which is a number with a decimal point and digits before and after it. When declaring the variable we need to specify how many digits we need after the decimal point for display purposes. In the example, we need a precision of 3. The declaration is added to the **<variableDeclarations>** section of the process data module and is shown in Figure 8.

FIGURE 8 - NEW VARIABLE DECLARATION

In Node 7 we can also add a **<dmLoop>** element. This is the same as a WHILE loop in a computer program and we are going to loop around a **<dmSeq>** until the user enters a value that is greater than "0.000" (which is the value that the variable `rDentsNicksScratchesScoresValue` is initialised to). I realise now that 0.000 is actually a valid value but it is too late to change the example.

I have shown this to provide details of implementing a **<dmLoop>** but this would be annoying to the user to find that an invalid value has been found after pressing the "Next" button. See Figure 9.
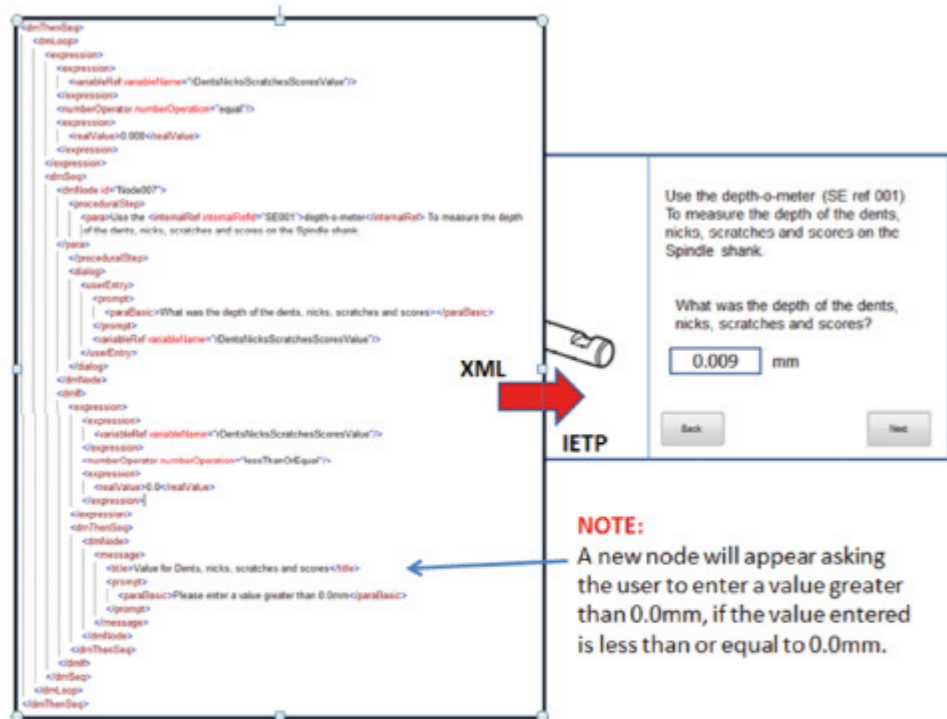
FIGURE 9 - NODE 7 USING A **<DMLOOP>**

NOTE:
A new node will appear asking the user to enter a value greater than 0.0mm, if the value entered is less than or equal to 0.0mm.

The better way of doing this is to use a **<validate>** element and the IETP can then check the value entered when the user moves the mouse or cursor out of the input textbox. The **<validate>** and its **<expression>** is shown in Figure 10 and if the user enters an invalid value the message "Enter a number greater or equal to 0.000" is displayed in the IETP.

PROGRAMMING NODE 11

Node 7 then uses data capture and in the example the user has entered the value "0.009mm". When the user presses the Next button, the Logic engine uses the expressions to test the value "0.009" with the damage limits set for the actions Accept, Reject or Repair and depending on the value, the process then transfers to one of three **<dmNode>** elements that represent these actions. The expressions are quite tricky to define as they contain upper and lower limits for each action.

If the value is below "0.010mm" it would take you to a node that tells you that the component is still serviceable, if the value is above "0.010mm" and below "0.020mm", it will tell you to send the component for repair and if above "0.020mm" it will tell you to reject (scrap) the component. Let's say that
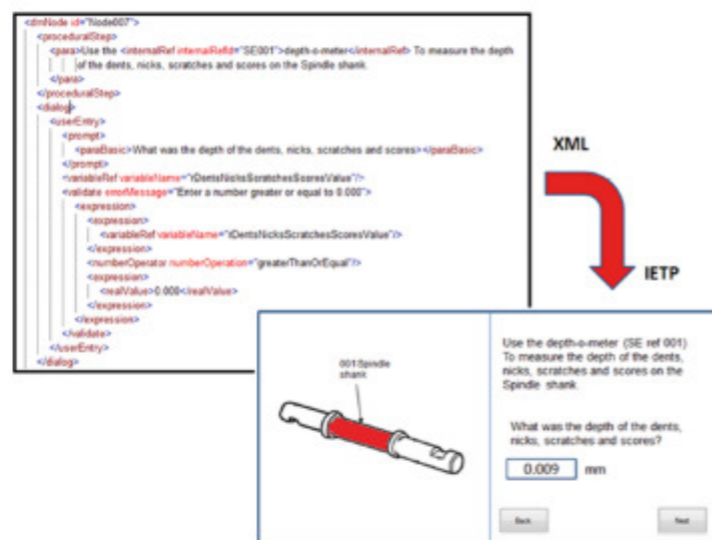

FIGURE 10 – NODE 7 USING A <VALIDATE> ELEMENT ON A USER ENTRY TEXTBOX

FIGURE 11 - NODE 11 SHOWING THE EXPRESSION THAT CAUSES IT TO DISPLAY

the damage found was acceptable "0.009mm", the logic engine will take you to Node 11 (Figure 11).

Node 11 contains a **<proceduralStep>**, two **<para>** and one **<dmRef>**. It is very easy to define in the XML. But what happens in the IETP when the user presses the Next button from this Node? The answer is that the process data module needs to backtrack to Node 3 (Figure 6) if another checkbox for the other damage types is selected and if no other checkbox is selected it needs to backtrack to Node 2 (Figure 3) if another feature ("*Cotter pin locating faces*" or "*Spindle ends*") of the component was also selected. This flow through the nodes demands careful placement of them in their sequences and the use of **<dmIf>** to make sure they are displayed or not. This can require substantial nesting of these sequences.

PROGRAMMING THE REST OF THE NODES

The rest of the nodes are very similar to what we have shown in this article and as no new constructs are required, we will not show these. This concludes the article and I hope that it has helped you understand what a process data module is and how you program it. In our example, we didn't have the opportunity to show many of the features that are available and in particular how to save the captured data. We will show this in the next article.

ASK MIKE

HELPING YOU MAKE THE RIGHT DECISIONS AND GETTING YOU THE MOST OUT OF YOUR INFORMATION ASSETS & STRATEGIES

Michael Ingledew answers your questions - if you have a question that you would like answering - contact michael@techdataworld.com

Do you deliver training in Canada?

I am more than happy to travel to the USA/Canada to deliver our training. I have even delivered one-on-one training remotely to save costs. So the answer is yes of course and would be delighted to support your project.

Can we licence your S1000D training material from you?

I have been asked this before and to be honest I am a little conflicted on this one. We have developed what I believe to be the best training material that is available on the market. This is not just me saying it, this is the clients we deliver the content to. Not only the material, I have a specific style and approach to training, I don't deliver simple PowerPoint slides, S1000D can be dull enough without trying to murder the audience with slides. Let's continue to talk and see where it takes us.

We would be interested in featuring in one of your interviews for your podcast - how do we get ourselves on the schedule?

Thanks for the interest, we do have a planned schedule for the podcast/YouTube and we like to give first preference to TDW member companies. The only real hard-and-fast rule is it is not a sales pitch. We like to focus on problem solving and topics that are of interest to the wider community. Let me know your suggested topic and we can get you on the schedule.

Can you please bring back some of your on the road blogs? We really enjoyed them!

You are not the first to ask, in fact I was asked the same by 4D Concepts at the S1000D User Forum. What I will do (when it is possible) I will do either a short live update or video blog from the road - I think the most appropriate place for this will be Instagram - so I would suggest following me over there.

When will the magazine be in the TDW App? I would like to access it from there!

I hear you, the reality is that it has proven a little trickier than we first thought and slipped down the priority list. I think we have now identified some software that will actually enable us to make this happen, we are currently testing and will (I hope) start uploading the magazine.

Do you think we should be upgrading to Issue 5.0 of the spec? What are your thoughts on the latest release?
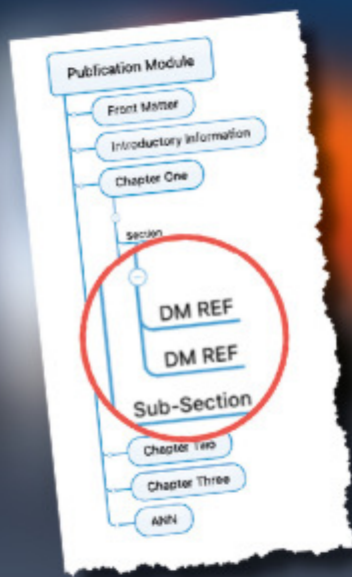
The newest version of S1000D is not earth shattering but there are some nice new features in there as well as some tidying up of the spec and supporting schemas. Not knowing your project it's hard for me to say, but check out my blogs and videos and see if any of the new features would add value to you and your project.

Mike love your videos, have you put a few pounds on?

You funny guy! Thanks for the positivity around the videos and yes thank you for noticing I have. Claire has given me until after conference season then I am told I have to drop a few dress sizes! But thanks for your concern!

TOOLS
FOR TECH COMM

MULTIPLE TEMPLATES & A STUNNING DARK DESIGN

At TDW we use multiple software tools to create both our training content as well as performing consultancy tasks for our clients. In this series, we look at some of the tools we use and the reasons why we use them.

This quarter we look at **MindManager from Corel.**

Mind-mapping is not something that we would immediately associate with S1000D or the planning or scoping of an S1000D or other technical publications project, so allow me to enlighten you.

VISUALISE AND STRUCTURE AN S1000D PM/CMP/ DMRL AND MORE

A tool that we use here at TDW is MindManager from Corel - a great, low-cost, tool that allows us to visualise everything from an SNS breakdown to a DMRL scope and Publication Modules to Applicability Modelling.

Mind-Manager has the ability to visualise then export into formats that we are then able to manipulate for importing into an S1000D environment.

Best of both worlds - MindManager works on both Mac and Windows, although the features do differ slightly.

Make sure you follow our YouTube channel where I show you how I use MindManager and other tools to define our technical publication requirements.

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ON THE COVER

Is it time to perform some emergency surgery on our technical publications? There are many things we can do to drive user engagement, improve usability and leverage our content without breaking the bank!

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DID-YOU-MISS?

Interviews from the S1000D User Forum?

You can watch the full recordings now on our YouTube channel or listen to the podcasts via the TDW app - more interviews to follow!

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INTERVIEW WITH JEFF STEVENSON

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COMPANY INFORMATION

CONTACT US

POSTAL ADDRESS:

TECH DATA WORLD
ST JOHNS HOUSE
ST JOHNS STREET
CHICHESTER
WEST SUSSEX
PO19 1UH
UNITED KINGDOM

CALL US:

+44 (0) 023 92 160 776

EMAIL & WEBSITE:

memberservices@techdataworld.com

https://www.thetdwmagazine.com

NEXT ISSUE

TECH DATA WORLD

S1000D User Forum London. Business Rules to WWII Bombers!

The real event itself starts on day two, plenty of traditional presentations from the larger supporting and organizational bodies presenting their updates and how they are supporting their respective member base. This year however there were some significant statistics presented, all around the level of contribution specific sectors make to national revenues. Needless to say these numbers were eye-watering and significant.

As the second day progressed, there were more in-depth presentations around lessons-learned, best practice and forward thinkers. The A400M project presented on some specific challenges that it faced and how the project team had to creatively overcome them. Forward thinkers were discussing how features available in S1000D could deliver real maintenance benefit, specifically around the advanced use of the S1000D Process Data Module and connecting it to health monitoring systems.

The evening of the second day was the long-standing and traditional networking evening. A tube journey across London and short courtesy bus ride to the RAF museum. All delegates were treated to food and drinks under the shadow of a Lancaster bomber whilst being serenaded by the Polkadots, a 1940s tribute group. Delegates were free to walk around the museum and many were in awe of the fantastic exhibits on display.

Day three was more of the same with the addition of vendor presentations. What was lacking was new, fresh or innovative topics from many of the vendors. There were very few Industry 4.0 genre presentations with many vendors staying safe and presenting the same subjects as previous events.

The final day was opened by key figures from industry, sharing both their experiences and challenges. The day was focused on the new and emerging supporting specifications, the status of development and the time-lines of release.

To summarize this years User Forum was exceptionally well attended, organized and received. Attracting many new attendees, exhibitors and presenters, the London event has been one of the better S1000D User Forums for some time.

The Hilton Hotel London a stones throw away from Tower Bridge and the famous HMS Belfast was the chosen venue for this years S1000D User Forum (and ILS specifications).

Delegates from all around the world converged to discuss what's new, what's coming and the best practices around the adoption and use of these complex specifications.

The first day of these events is always a workshop and pretty high-level no frills introductory to the what, why and organization of the specifications. This year was no different, updates from various key individuals and organizations involved in the development and maintenance of the suite of specifications. Previous events have seen the workshop day low on attendees, but this year it was different, from day one the event was exceptionally well attended. One of the presenters did a quick poll by the show of hands, asking who was new to the spec and who was new to the event. Surprisingly there was a significant show of hands for both. The unsurprising poll was when asked for the show-of hands for those in the defence sector v those in the aerospace sector. The overwhelming majority were from the defence sector. Unsurprising due to the fact that the MRO Europe event was also being hosted in London over the same dates and many aerospace companies would have opted for MRO over S1000D.

"Try hacking into one of these!"

2019 Support Chain Seminar

October and November every year sees several key industry events all around the world. A long-standing event in the UK is the focused Team Defence Information hosted "Support Chain Seminar".

TDW attended this event to find out what is new and learn about any key developments in support within the UK MoD.

Not only is this an opportunity for the MoD to brief industry, but it is also an opportunity for the MoD to learn from the wider industry representatives present.

As we move more toward connected platforms, systems and infrastructures the ability to be more operationally agile is now possible with the leveraging of Industry 4.0 capabilities.

What did we learn and what did we make of the event?

The backdrop for this year's event was the stunning STEAM Museum, Swindon. Surrounding the delegates with beautiful exhibits from the previous innovations from the last industrial revolution was entirely appropriate.

The opening line from our host, Phil Williams, MD TDi, was pertinent and apt, "Try hacking into one of these!" referring to the monster steam engines in the sheds surrounding us.

The opening keynote session was deeply thought-provoking, focusing on Artificial Intelligence and robotic automation. How [unrelated] wider industry is embracing 'Industry 4.0' capabilities — delivering real measurable business benefit, reduced downtime, increased product safety and user engagement, to name a few of the upsides.

The MoD presented on an ambitious target to deliver circa £1.9BN in supportability cost savings with Industry 4.0 playing a pivotal role in realising this aggressive goal.

The new Aurora Engineering Partnership presentation was also fascinating. The presenter raised the subject of updating technical publications. The specifics were that of the UK MoD operated Spitfire aircraft, where the partnership has converted 1940s technical manuals to a '*modern IETP format*'.

The remainder of the day saw various presentations along the same theme all placing support at the forefront of our platform minds and how the ability to leverage new tools, technology and processes will deliver significant savings.

To learn more about this annual event:

www.teamdefence.info