CONVERGE
AN ARROW COMPANY

.FOM

Future of Obsolescence Management

09/2016

LOOKING FORWARD
Edition III

Welcome!

Welcome to the Future of Obsolescence Management 2016.

Since our first event, the future of obsolescence management continues to be a critical topic for our partners and customers. At FOM 2016 we reflected the broadness of the challenge by calling on experts from differing verticals and backgrounds to share their experiences and greeted guests from over 20 countries.

As before, the main aim of FOM was to look to the future of obsolescence management and facilitate networking and debate that will advance our understanding of this dynamic area of our business.

For example, topics at FOM 2016 included how a car maker has pioneered a stocking solution to address obsolescence, advice on how to wrestle the "obsolescence tentacle in aviation" and what we can learn from a global train manufacturer who has moved beyond component obsolescence. Running thru the discussions was question of how the massive supplier consolidations can affect the EOL component market in the coming years.

We look forward to welcoming you to our next FOM.

Edna Ruddy,
Global Director FOM and EMEA

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200 INTERNATIONAL VISITORS **1** MODERATED DEBATE **7** EXPERT SPEAKERS

STUART
BROADBENT

OBSOLESCENCE DIRECTOR
ALSTOM

Please tell us about your professional background?

I am the Obsolescence Director, responsible for all aspects of obsolescence management in Alstom's transport business. I address the challenge of reconciling the long lifecycle of railway equipment (rolling stock, signalling and infrastructure) with the short lifecycles of commercial and industrial components and sub-assemblies used in their build.

I manage a special engineering team in France (in Tarbes and Villeurbanne) that monitors obsolescence risk and identifies solutions for Alstom systems with a network of worldwide engineers at Alstom.

I joined the rail industry in 1980 as a graduate engineer with GEC Traction in Manchester and have worked in a variety of commercial, engineering, information systems, logistics, manufacturing, projects and rolling stock maintenance roles in GEC, GEC Alstom and Alstom, both in the UK and in France, so I bring a wealth of experience to a discipline that needs to look back in order to plan the future. I am also a member of the council of IIOM's UK chapter.

What trends in obsolescence management have you been observing in your industry?

Never the first to innovate, it has been more than 50 years since electronic components were first used in the rail industry. In this time, processes have developed to manage obsolescence of electronic components that keep trains running.

Rail operators used to set up repair workshops for electronic equipment and monitor the availability of the components that they needed in order to make the repairs. When obsolescence was announced, they purchased lifetime buy stocks, or found substitutes partially approved by the original equipment manufacturer.

However, the increasing sophistication of the electronics used in the industry meant that the operators relied more and more on the manufacturers to support their product, though rarely by making formal arrangements for lifetime support such as those that exist in the aerospace industry. For as long as the manufacturers designed their own electronic boards, they were able to manage obsolescence in the traditional way, with obsolescence monitoring, lifetime buy stocks, and ad hoc redesign.

As electronics became ubiquitous, rail industry manufacturers started to use commercial off-the-shelf (COTS) electronic assemblies and operating systems, and were no longer the master of the design of the electronics they used, whether it was an on-board passenger information system or a control centre server.

The product lifecycle of COTS equipment and operating systems is short – 5 to 10 years – but lower development and product cost are too attractive in a market where first cost dominates.

Are there any industry practices around obsolescence that you would like to see improved? Please explain.

The practice of planned technology refresh and upgrade that is found in aerospace and defence is not yet established in the rail industry, so manufacturers develop new product to meet the challenge of reducing first cost with little regard for sustaining the existing product.

Existing product is then sustained by ad hoc lifetime buys and obsolescence treatment, rather

than planned technology refresh or upgrade, ultimately to the detriment of the final customer.

Such a change will require cooperation between rail operators and asset owners, and the supply chain. It will also require the weighting of first cost vs lifecycle cost in tender appraisal to change.

> *Obsolescence management has to start in the development phase of product and systems.*

What changes would you like to see chip manufacturers make to address future obsolescence challenges?

I would like to see chip manufacturers improve the long-term support for their products. In industries such as rail with long development and validation lifecycles, and where the customers may exercise options for further build five or more years after the original build, chips can become obsolete before deliveries have finished.

I understand the constraints on manufacturers during the primary sales lifecycle of product, but rather than purging the supply chain of stock after the last-time-buy date, they should transfer dies, wafers, tooling, and even IP to other manufacturers who have a different economic model, and who are able to reduce the cash investment in lifetime buy stocks by the end users.

Today, manufacturers such as Alstom have to store large quantities of electronic components to support their customer programmes and forecasts, including options that may never be exercised. Tomorrow, I want to be able to place an option to purchase components in the future at an agreed price which is covered by a supplier with a die bank and a packaging line. Today, the actions of the chip manufacturers enable the counterfeit market for components to thrive, at the expense of all, and to the profit of the criminals.

What impact do government regulations have on your obsolescence purchasing practices? Please explain the differences.

The tightening of regulations relating to counterfeit components being discovered in delivered systems will force purchasing departments to strengthen their procedures on procurement of obsolete components to prevent counterfeit components entering the company. Today, the buyer is a hero when he finds a stock of obsolete components of doubtful provenance; tomorrow their company could have a criminal record.

From your viewpoint, what should the future of obsolescence look like?

The rail industry will need to make some changes in order to sustain the COTS systems for the 30-to-40-year lifecycle (or more) still expected by the asset owners and operators. I will explore this subject in more detail in my presentation at the FOM conference.

Are there any suggestions or advice you would like to share based on your experience with obsolescence?

Obsolescence management has to start in the development phase of product and systems – it is too late to start in the service phase of product. Obsolescence risk assessment of systems and products allows the appropriate obsolescence strategy – reactive, proactive or strategic – to be used for the different components of the system, and don't forget that software is an important component today.

JÜRGEN LAUTER

CEO

**ELEKTROTECHNIK
LAUTER GMBH**

Please tell us about your professional background.

It was not my dream from early childhood to work in the electronics industry. I grew up on a small dairy farm in southern Bavaria and was learning a lot about farming while I finished school. I recognized early that earning money could be difficult in farming, so I decided to study business administration. While studying at the university, I began to work simultaneously in electronics manufacturing, where I gained a deep knowledge of that area. After graduating, I started my company ETL, which offers Electronic Manufacturing Services, and have worked in both the technical and business sides of the business since then. For several years now, I have focused specifically on the administrative parts of the company.

> *In my opinion, franchised distribution should play a more active role within the supply chain to reduce risks for all parties, at least for a certain time.*

What trends in obsolescence management have you been observing in your industry?

The importance of obsolescence management is rising dramatically. Most of our customers are now deeply interested in the subject and have begun to understand that obsolescence management is not a simple task that can be managed in a reactive way. The notion that obsolescence has to be managed within the entire supply chain is now slowly developing. We currently observe a high demand from our customers for workshops and consulting in this area.

Are there any industry practices around obsolescence that you would like to see improved? Please explain.

In my opinion, franchised distribution should play a more active role within the supply chain to reduce risks for all parties, at least for a certain time. Currently, franchised distributors actually offer almost no benefits, such as stocking or bridging of obsolete components, to their customers. Their function is mostly limited to shipping the last-time buys to customers who have to assume the risk of a demand downturn on their own.

What changes would you like to see chip manufacturers make to address future obsolescence challenges?

I experienced situations where manufacturers — and I'm not talking about the small ones — are completely surprised about the size of LTB demands and are not even able to fulfill them. This behavior is quite inadequate and causes trouble. On the other hand, there are manufacturers on the market which are able to offer almost no obsolescence on their products. Manufacturers should raise prices to lengthen life cycles rather than end production completely. Another way could be to sell licenses to third parties to produce the parts in the future.

Specifically, what effect will the wave of chip manufacturer consolidations have on obsolescence?

I am convinced that the obsolescence problem will rise dramatically as the consolidation creates unequal partnerships within the supply chain and less competition. Furthermore, as Tyler Moore from Arrow explained in the last FOM, there will not be very many manufacturers that will be able financially to invest in the new expensive technologies of the future. I would

assume that those companies would then need to focus on the "state of the art" products which offer better margins.

What impact do government regulations have on your obsolescence purchasing practices? Please explain the differences.

Generally speaking, the effects are similar to those of regular obsolescence, but bigger, as all products can be affected at the same time.

As we have seen with RoHs, new law and regulations have created significant complications within the supply chain. Furthermore, national regulations such as conflict minerals restrictions have significant financial effect. It is questionable whether some of the regulations are reasonable

For me the biggest challenge is to inform the involved parties about the problem of obsolescence and to convince them that employees at all levels have to be aware of the risks and the importance of their role in the game.

compared to their benefits; but purchasing practices have to be adjusted to the new situation to meet regulations. From an EMS perspective, unfortunately, we are often able only to react, but not to influence it ourselves.

From your viewpoint, what should the future of obsolescence look like?

For me the biggest challenge is to inform

the involved parties about the problem of obsolescence and to convince them that employees at all levels have to be aware of the risks and the importance of their role in the game. The truth is that most of our customers are actually trying to manage obsolescence in a reactive way and fail to effectively distribute the weight between all parties involved. In the future, we should have a clear understanding of who within the supply chain is responsible for which task and which tools can be used in a strategic way.

Is there any advice or suggestions you would like to share based on your experience with obsolescence?

I strongly advise everybody to take this problem more seriously and to understand its importance to strategic business development.

LORENZO
CARBONINI

HEAD OF COMPONENTS &
SW STANDARDISATION

LEONARDO-FINMECCANICA S.P.A.

Please tell us about your professional background.

After graduating and receiving my physics degree, I began my career at Finmeccanica (Aeritalia) in 1989-1996, as an RF/microwave designer developing electromagnetic compatibility (EMC) test antennas and test chambers for commercial and military markets. During this time, I also received a mathematics degree and was responsible for the design and testing of full EMC test systems. I then spent 3 years at Thermo Electron Group leading a development team of EMC testing products, and in 1998 I "landed" at Marconi Italiana with responsibility for developing military wireless avionic and communication products. This first phase of my career was really enriching in technical knowledge (17 symposium papers, 7 international review papers, 4 patents) and in product development experience.

In 2001 I decided to take advantage of a new opportunity and create a group supporting parts/materials introduction and obsolescence management in the spin-off company Marconi Mobile. However, I did not give up my passion for microwaves, which I still continued through my IEEE MTT Society membership.

The management skills required for this new role were challenging for a person with a strong engineering aptitude like me. However, the group grew and in 15 years expanded its activity scope to include hazardous materials, export compliance and counterfeit prevention. Over the years the group was positioned in different functions such as procurement, manufacturing and engineering, and expanded its size culminating in a transnational organisation with Selex ES. My group is presently supporting 2 divisions out of 7 in Leonardo-Finmeccanica.

What trends in obsolescence management have you been observing in your industry?

Obsolescence management has a special impact on cost and delivery schedules for any company designing and manufacturing electronic products with long life cycles (5+ years), or needing to support delivered systems in the long term (10+ years). This situation is common to the aerospace and defence, automotive, and transportation markets. Although in the past obsolescence management has been applied mainly to the military and aerospace market, at Leonardo-Finmeccanica we are now observing an increased attention also to non-military markets.

In general, when the full life cycle of products (from development to post-delivery support) is considered, a funded and robust obsolescence management process may help focus the design/redesign efforts on strategic products, thus reducing the total cost of ownership of the product portfolio.

In the past, this approach was carried out only upon customer request, typically for large, long-term aerospace programmes. Now the strong drive to achieve overall cost reduction and better market competitiveness is supporting a new view of obsolescence management.

The regulations on hazardous materials (RoHS, now joined by REACh) have implied, and will imply in the future, obsolescence risks even for industries which may be subject to exemptions (e.g. aerospace and defence). Furthermore, our world is constantly experiencing conflicts and changing alliances among countries, and increasing attention to export rules (e.g. ITAR, EAR, BAFA) represents

a specific challenge for any company working in military markets.

The reuse of the same parts for different products is another point yielding cascaded advantages: increase of volumes with potential cost savings and reduction of procurement/incoming activities, reduction of obsolescence management activities and solutions reuse, reduction in logistics space needed for key components, and true governance of the design strategy and tools. These advantages are particularly evident for large, geographically distributed companies with multiple design centres and manufacturing sites.

In general, I am seeing increased attention in my company to the way parts are introduced, managed and possibly reused, presenting an opportunity to increase efficiency and overall competitiveness. However, this implies challenges to the way the processes and supporting tools are needed in order to turn ideas into real practice.

Are there any industry practices around obsolescence that you would like to see improved? Please explain.

Historically, obsolescence was viewed as the problem of a buyer being unable to find obsolete parts on the market to guarantee delivery, without considering all the risks related to after-market procurement (e.g. increasing purchasing cost, deteriorated parts risk, counterfeit risk, and inability to guarantee delivery). This concept has not been completely eliminated for non-experts in the field.

In large, geographically distributed organisations, the non-cooperation among functions may be a source of avoidable costs (inaccurate definition of "last-time buys", reinventing the wheel every time to solve the same obsolescence issue, obsolete parts purchasing in the presence of unused stocks).

On the other hand, a robust and proactive obsolescence management process (involving a realistic appraisal of last-time buys as a minimum, and a full-portfolio product-level obsolescence risk analysis at best) can help reduce risk and cost of delivery and provide some input on the product management strategy, like taking new developments or phase-out decisions at the product portfolio level.

An effective obsolescence management process needs to be very flexible in involving concurrently several functions (mainly, procurement, manufacturing, supply chain, engineering and customer support), which may be difficult to implement in large, geographically distributed industries, and requires specific tools for managing both the relevant information and the process.

A strong inter-functional, cooperative approach backed by management and adequate information/process management, and tools that are sufficiently integrated with the manufacturing ERP and engineering design tools, are normally the improvement points needed to reach the best results where investments may lead to the highest returns. Strict governance in the introduction and management of information on hazardous materials and export rules may provide significant added value.

Overall, it is evident that a unified, coherent approach to product parts and materials management can lead to better value for the company if a sufficient level of integration can be achieved with concurrent processes such as product development, procurement and manufacturing. A process of this kind needs to be designed and tailored according to the business model of the company, with the most

sensitive aspects being the partial or total outsourcing of engineering, procurement or manufacturing activities.

What changes would you like to see chip manufacturers make to address future obsolescence challenges?

In most cases manufacturers should improve and standardise the availability of information about the life cycle of their products. A declaration of the years to end of life (YTEOL) of a manufacturer's full product portfolio would be considered quite sensitive information; however, the quality and availability of comprehensive information isn't always at the highest level, with important difficulties in some areas (e.g. commercial memories, RF, electromechanical parts, connectors).

REACh, RoHS and Export Control information is not always readily available in a standardised form, and sometimes certifications are generic and have weak points. This effectively limits the possibility for a wider risk analysis, which is nowadays becoming more and more advisable.

Moreover, the way obsolescence is announced from manufacturers through OEM customers through the supply chain is normally not satisfactory because it is entirely delegated to

distributors checking past orders in a specific time frame (typically 2 years). This is not a reliable way to send PCNs/PDNs or to help the customer mitigate impacts, especially for those companies which require small volumes and for which the minimum order quantity is sufficient for several years beyond the 2-year time frame.

A possible solution for those customers that wish to mitigate these risks involves contracting a data provider to gather this information, at a cost and without any liability on the data content themselves. As we all know, in obsolescence management a single error may cause significant cost and delivery impacts with company-wide visibility.

Specifically, what effect will the wave of chip manufacturer consolidations have on obsolescence?

I have seen this in the past, and we'll see strong effects with the big mergers recently occurring.

The main phenomena are product line consolidation by obsoleting "redundant" (not necessarily form fit or function-compatible) parts, and product line "clean-up" from parts which show poor commercial performance or

In most cases manufacturers should improve and standardise the availability of information about the life cycle of their products.

which would require unsuitable investments to increase life cycle. (RoHS conversion or product/process changes to meet REACh are good examples as well.)

Other phenomena strongly impacting obsolescence are the decisions to make a specific semiconductor process obsolete, fab shutdown, and changes in the partner fabs (insourcing/outsourcing). All these decisions could lead to the cancellation of an entire product line or to the sudden obsolescence (sometimes with limited stock last-time buy) of specific low-volume/market products.

From a customer perspective, manufacturers involved in mergers seem to take advantage of a stronger market position to make tough and sometimes disruptive decisions about their product portfolio.

> *The only critical impact blocking manufacturing of parts in the EU due to the presence of an SVHC in any percentage is when the substance is banned.*

These phenomena cannot be avoided and need to be managed properly on the customer side. However, especially for some types of components (e.g. analogue, RF/microwave), "similar" parts from the same manufacturer — which could solve the obsolescence problem — require extensive redesign/retesting work by the customer, and even the requalification of its own product for specific critical uses or programmes. These costs need to be reduced, and some of the pending mergers could have significant impacts.

A possible option for improving conditions is "teaming up" with partners or our own customers, when a sufficient convergence of interests is possible, in order to increase the negotiation power with manufacturers. We have had in the past some positive results that otherwise were not achievable.

What impact do government regulations have on your obsolescence purchasing practices? Please explain the differences.

European regulations on hazardous materials/substances, like REACh and RoHS, have had significant impact on the components market.

The main effects are cost increases, and in some cases (like the procurement of non-compliant parts such as leaded non-RoHS components) obsolescence practices such as RoHS conversion of components or REACh substances of very high concern (SVHCs) are not performed in the absence of a significant commercial advantage for the manufacturer.

I think that the main effect of the RoHS "wave of obsolescence" has passed, although there are some exemptions that just expired or are about to expire in future years. Moreover, military use exemptions might become less tolerant in the future.

The actual effect of REACh on obsolescence is still to be understood.

Components manufacturers targeting the European market have a strong interest in excluding any SVHCs from their products, and this might imply manufacturing process changes or obsolescence in case of limited commercial advantage.

On the OEM side it is clear that REACh requires activities to trace SVHCs above 0.1% in weight, to guarantee the required traceability (recent decisions by the European Court indicate that detailed analyses are likely to become mandatory in the near future).

The only critical impact blocking manufacturing of parts in the EU due to the presence of an SVHC in any percentage is when the substance is banned (this will occur with chromium trioxide by September 2017). This fact, and the overall impact of REACh on the defence market, is of special concern for both national governments and the European Defence Agency, which has recently launched a survey to assess the impact on suppliers of military products.

Finally, even customers in the military market are requiring RoHS and REACh analyses to understand, first, the impact on disposal costs and, second, the risk deriving from substances likely to be banned.

My opinion is that everyone should do what is possible to preserve our environment and living beings. Therefore, wherever necessary, hazardous substances should be avoided in

the development of any new product and in old products should be kept under control.

From the viewpoint of a company strategy, it is quite evident that parts containing hazardous substances are likely to have a shorter life cycle or even sudden manufacturing issues (when those substances are banned). Especially for companies that are ISO 14001 qualified for environmental impact, the exclusion of hazardous substances is in line with continuous improvement requirements.

US conflict minerals regulations, which require traceability of tin, tungsten, tantalum and gold mined in the Democratic Republic of Congo, to date are a requirement for OEMs and the whole supply chain through the level of smelters. The due diligence needed requires efforts in gathering the relevant information; however, I do not think it should have specific effects on obsolescence.

Export control regulations (e.g. ITAR, EAR, BAFA), although they do not have a direct impact on obsolescence, may have exactly the same effect for specific contracts, applications, customers or countries when the need arises for a search for unrestricted alternatives. Achieving compliance requires specific traceability in the procurement and manufacturing process, potentially blocking deliveries for forbidden customers, with the risk of company blacklisting and individual penal sanctions (the military market is the most sensitive). It's absolutely clear that risk mitigation from the early design phase is very important in order to avoid otherwise unsolvable or high-cost export control issues.

To summarise, my opinion is that a winning strategy for any company developing long life cycle products is to consider, beginning at the component introduction stage and continuing over the entire life cycle, all relevant regulatory compliance issues that affect the product. The growing number of regulations deriving from parts/materials requiring compliance in a global market requires every company with a complex product portfolio to consider specific mitigations.

From your viewpoint, what should the future of obsolescence look like?

In order to manage proactively the complexity of the risks described, we are forced to consider obsolescence management in a wider framework of the parts management process of a company (from the introduction to the decision of use inhibition to obsolescence). This may lead to important cost and risk reductions.

Full "company life cycle" management of a part, driven by external constraints and requirements (e.g. obsolescence, RoHS, REACh, export control) or by internal strategies (e.g. preferred parts, technologies, manufacturers), may help reduce the overall risk and increase the reuse of parts in a company with cascaded cost benefits for obsolescence management.

Is there any advice or suggestions you would like to share based on your experience with obsolescence?

A strongly collaborative approach, with all the parties involved in obsolescence contributing to the process in different ways (procurement, engineering, external suppliers, data providers), is key to achieving results that are valuable to the company. In my experience, a strong competence with the correct profile (we all like to feel we are "champions" at something) and in the form of support to others' work is the best approach.

A "buy in" of management with measurable benefit targets is necessary in order to obtain a company commitment on obsolescence management as well as focused investments on tools tailored to the company product/processes.

ROB PICKEN

DIRECTOR FOM EMEA

CONVERGE

Last year you were one of the presenters at FOM who discussed Personnel and Knowledge Obsolescence. Have you seen any developments in this topic in the past year?

Yes, I've seen some developments in this area, but they will take some time to bear fruit. In the UK we are starting to see increased focus on internship opportunities for young people at engineering and technology companies. A lot of this has been pushed by changes in financing for universities and a lack of genuine opportunities once college or university courses have finished. Across the high-reliability sector we have seen an increase in placements and training for non-graduates, and in the oil and gas E&P (exploration and production) sector there has also been an increase. In this case it has been in junior undergraduate intake; however, this is almost totally driven by market conditions, not by the quest for innovation. Further, the ideas we talked about together at FOM2015 have been adopted more widely. One of our key speakers this year, Marijan Jozic, head of Engineering at KLM and chairman of the AMC (Avionics Maintenance Conference), felt the topics I opened up on personnel obsolescence and brain-drain could be interesting for his AMC/

ARINC conference in Atlanta. The reception I received, along with questions, observations, and follow-up requests, shows a globally incongruous picture, but a picture with a lot of hope. Everyone has more or less the same problems, but it is still not talked about enough. In this case, where people are the backbone of success, hope cannot be a strategy!

You have since moved from SiliconExpert to lead the FOM initiative at Converge in EMEA. To our readership, what does this new role mean?

At a high level, it is a great opportunity to change the way we communicate with the attendees and readership of FOM. For our wider Converge client base, it means a unique focus in the marketplace on the data-driven decisions. At Converge my role is to lead FOM initiatives in the high-reliability, high-criticality industries we work with on a daily basis. First and foremost, this involves listening to customers and understanding why they are facing challenges. This is a fairly alien concept that is widespread throughout our industry, and it gives a totally different impression of the independent distribution space – specifically the outstanding team

at Converge and what we can add to an increasingly narrow supply chain. Making sense of the incredible volume of data available – and, most critically, focusing on how much of the 'noise' is relevant to a given company in a given industry on any given day – is fraught with risk for all of our clients. It is my job to translate data into information into intelligence, and give the control back to the client in their supply chain. This may sound counter-intuitive for a company that has grown in the way we have, but the future is here and it is driven by data. To help our contacts through this developing world, I will be publishing regular white papers, blogs, and articles, and talking at conferences and trade shows … it is exciting.

What have you learned from listening to customers about their main concerns?

Mostly everyone I talk to thinks everyone else has a much better way of coping with the issue. In reality, there are market-leading strategies for coping with obsolescence events in enormous household names, but you are just as likely to find innovative and forward-thinking solutions in tiny, niche manufacturers. The fact that everyone is running to catch

up with the imaginary panacea that exists somewhere else is actually stifling progress. This is something that we hope FOM and our insights can help reduce. The other very noticeable aspect is massive uncertainty – we have all been living through huge numbers of manufacturer consolidations, and now that is bleeding into distributor consolidations too. For companies with already-squeezed supply chains and with pressure on budgets and targets for delivery, uptime, and other metrics, there is a feeling that choice is evaporating, and this is not healthy for anyone. I should also point out that nobody is asking us to take the problem away – it is still vitally important that the contacts and customers we have in the market retain control over their business and supply. We have to be very mindful of that as we present solutions that do not just replace one supplier with another, but give a genuine shift in control back to our client.

> *At a high level, it is a great opportunity to change the way we communicate with the attendees and readership of FOM.*

What is your one wish for the future of obsolescence management?

I have a few, in truth, but the one which would make the starkest difference would be simply better, more consistent communication from manufacturers. Here is an example that I remember sharing at Marijan's AMC conference, following a question from the floor. A recent SiliconExpert internal study showed that nearly 41% of all obsolescence from component manufacturers is totally unannounced. This means the parts are just removed from the website or from the price book – or they're just discontinued with no notice. Of that ~41%, around 30% of it is immediate, so not only is there no notice, but the parts may as well have simply evaporated, as there is no opportunity to carry out a last-time buy and hold safety stock. This removes control to build options, any redesign ability, and it throws the consumer into panic mode. Good decisions are rarely made in these conditions, but we have tolerated this for years from component manufacturers. This will – without any doubt – get worse as manufacturers continue to consolidate, as I mentioned earlier.

ULRICH ERMEL

DIRECTOR NEW BUSINESS
DEVELOPMENT

PULS GMBH

Can you explain what the COG is, for those who don't know about it?

COG stands for Component Obsolescence Group and represents a non-profit community/network of industrial professionals. This network was originally founded more than 15 years ago in the UK under its former name, COG UK. In 2005 COG Germany started as a "franchise non-profit branch" with both organizations having more than 260 member companies and more than 540 individuals together. Last year COG changed its name to IIOM (International Institute of Obsolescence Management) to become a more professional and recognized body for those involved or interested in obsolescence management. The institute is for professionals worldwide who are looking to further their knowledge and understanding of the obsolescence management discipline and who wish to network with an international group of companies. IIOM will offer post-graduate education on obsolescence management in the near future. In addition, IIOM also represents the network's views in multiple standardization bodies around the world. Finally, IIOM is working on a much wider, global scale and is in discussions with interested professionals from the Netherlands, Belgium, the USA, Japan and Brazil. We are expecting to create another IIOM chapter in one of these countries soon. Since IIOM is in transition, and due to legal limitations, the German site still carries the name "COG Deutschland", but it is an IIOM chapter.

Your career path has changed since we last saw you at FOM 2015; tell us more!

You are very well informed! Yes, indeed, I did change my job; after more than 10 years in embedded and digital electronics, I felt a strong desire to be closer to power electronics again. Luckily, there is a company located in my hometown of Munich with a strong focus on power electronics, and they were crazy enough to hire me. In my new role I really enjoy close ties to engineering and electronic design, but this has no impact on my involvement with IIOM or COG at all, since my work with these organizations is considered voluntary work.

You have a very wide view of the electronics industry. What do you see as being the big, future trends in obsolescence management?

In my opinion, all aspects of costs will become more important. In COG/IIOM's beginning, we had long and detailed discussions on how to measure costs caused by obsolescence. We found that on a case-by-case level it is possible to calculate cost, but this only works if obsolescence really happens, due to adding up costs for obsolescence-solving actions reactively. As you may surmise, it is still a challenge to calculate costs or savings before obsolescence actually occurs. Recently, we have seen a lot of "life cycle costing" or "total cost of ownership" calculation schemes coming up (e.g. the German Engineering Society's standard VDI2884), and these schemes can be easily adopted for proactive obsolescence management considerations. We see this upfront calculation on product or project savings based on proactive obsolescence management as the next big step within our community. Nevertheless, since electronics are constantly evolving,

we see an increasing demand for reactive obsolescence management services.

Tell us about the plan for COG Benelux.

In my opinion our obsolescence management community can achieve more together if its members have a lot in common. For example, bringing people together who speak the same language, from the same region, and who share the same professional challenges has proved to solidify our community in Germany. In COG Germany we also have a number of members from Switzerland and Austria. I expect similar behaviour amongst the future COG members in Benelux, as the Netherlands, Belgium and Luxembourg are adjacent and have a number of cultural and linguistic commonalities. Moreover, the large number of participants from the region at FOM 2015 shows that there is demand for an obsolescence management community in Benelux. IIOM/COG is really happy to partner at FOM 2016 and build the foundation of COG Benelux.

Can you elaborate on the benefits that the COG members can expect?

IIOM membership offers the possibility to understand and discuss the factors around mitigating obsolescence at all levels of the supply chain.

Regular member meetings are held at various locations within the UK (3x per year) and Germany (4x per year), which provide:

- Presentations, case studies and discussions
- Updates on appropriate legislative activities
- An invaluable opportunity to network in an informal environment.

The members-only area within the IIOM website offers an online community to:

- Keep track of member companies' changes and updates
- Access contact details of all members
- Link to obsolescence information on the web
- Find supplier members' profiles within the IIOM solution provider pages (also available to non-members)
- Link to semiconductor and passive manufacturers on the web
- Search an extensive archive of presentations given since 2000
- Moreover, members can:
- Get discounted attendance at biannual international conferences and COG Germany expos and workshops
- Receive free copies of educational booklets
- Have access to other licensed COG communities, e.g. COG USA (in future)
- Participate in international trade fairs and events like Electronica or FOM

What is your wish for FOM in the coming year?

Stay loyal to your concept; it is still new and already very successful. Perhaps you can build workshops or breakout sessions into next year's event. This would definitely contribute to the exchange of participants' ideas and thoughts within the community.

BILL FLIEGEL

DIRECTOR FOM AMERICAS

CONVERGE

Tell us a bit about your professional background.

I have been in the electronics distribution business since 2000 and have seen many changes. I had the opportunity to spend 11 years with Avnet in multiple roles ranging from product management to field sales and global account management. I then had a short stint with Honeywell Aerospace before joining Arrow in 2012 as a regional sales manager for the Zeus Aerospace & Defense vertical market segment. I have had the privilege to sit at the table with many experienced professionals in our industry to discuss the modern challenges in the marketplace. I am very excited about my new role as the Converge director of sales for FOM in the Americas. The **F**uture of **O**bsolescence **M**anagement is a response to the challenge facing most companies in the maturing semiconductor industry today.

Can you tell us what your new role at Converge will involve?

I will be part of the Converge team that support the growing obsolescence challenge evolving in our industry.

I will meet with customers that deal with this challenge and help provide modern solutions within Arrow's group of companies such as SiliconExpert, Zeus, Supply Assurance and Converge to help address the ongoing obsolescence environment.

How does this role fit in terms of your previous work experience?

This role fits perfectly with my previous work experience as over half of my 16 years has been spent discussing obsolescence and the challenges that many prominent global companies are facing.

You have spent many years in the electronics industry connecting with customers; what do you think their main concerns are facing 2017 and beyond?

In my experience, customers face similar challenges based around growth and profitability. Growing sales and improving operating expenses to reduce costs and enhance profitability are behind many corporate goals and initiatives.

In 2017 and beyond, I believe that electronic component obsolescence will continue to be a paramount strategic initiative, along with cost reduction and supply chain management.

What solutions do you hope to be able to bring to address these concerns?

The collective team that make up Arrow and all of their companies will be the differentiating factor that helps companies develop their obsolescence management structure and processes.

Is there a wider Arrow Electronics solution, and if so, how do you see it working?

Yes, there certainly is!

Arrow has invested in acquiring many businesses to support the entire spectrum of product design, manufacturing, and distribution. Companies in market segments such as aerospace and defence, medical, and automotive, deal with obsolescence issues every day.

Arrow SiliconExpert is the perfect obsolescence predictive analysis tool on the market today.

Arrow Zeus can provide engineering resources to help redesign boards and find replacement components for parts facing an EOL notice.

Arrow Supply Assurance can assist with last-time buys when necessary and provide many creative financial solutions to these significant procurement decisions.

Converge can provide that trusted safe haven for when you do need to go to the open market for obsolete components, and can assist with disposition of excess inventory that other OEMs desperately need for production.

What are the key changes you are seeing in terms of challenges for customers and innovative solutions in the marketplace?

Some of the key changes that I see are the reluctance of customers to let go of legacy practices and always running with "that's the way we always did that" and not changing with the times. Companies that do not change and explore newer, more innovative ways of doing things will surely be left behind in our evolving global economy.

There is a lot of talk about supplier consolidations. In your view, what impact may this have on the industry in terms of obsolescence?

This will have a major impact on the industry in terms of obsolescence. We are currently observing a lot of merges and acquisitions and this will potentially lead to product line rationalisation and more EOL notices.

What is your one wish for the future of obsolescence management?

That companies both on the OEM side and the OCM side will find a way to work together to prevent shortages of electronic components in the marketplace. The best way to manage obsolescence is ultimately to avoid it.

Arrow Zeus can provide engineering resources to help redesign boards and find replacement components for parts facing an EOL notice.

ROBERT HODKINSON

OBSOLESCENCE ENGINEER

THALES NEDERLAND B.V.

Please tell us about your professional background.

I graduated in 1996 from Bradford University, UK, with an undergraduate degree in electronics and an MSc in real-time software. My first real work experience with electronics was during my undergraduate degree through a work placement, and soon after I graduated, I started working for ABI Electronics in Barnsley. Within a half a year I ran into my first obsolescence issue, an Analog Devices high-performance ADC. After an amazingly painful period of trying to find stock, we tried to complete a limited redesign, which exploded into an entire product revision. The more we poked at the design, the more it turned into a technology refresh exercise with a healthy amount of feature creep. In the end, we ended up with Version Two and a much superior product.

In 2010 I moved to the Netherlands, and in April 2011 I was hired by Thales Huizen, the Netherlands, as the obsolescence engineer and electronics development engineer.

In theory my work is obsolescence management, but in practice it's actually about moving to and fro in the middle of all development projects and production, as well as to a lesser degree supporting purchasing and communicating with the product line managers.

The slide into obsolescence was entirely accidental, but to me it was a natural one.

The variety of technical experience and different target markets dealt with was ideal. I had started in the age of 256kb EEPROMs (remember those?) in the 1990s, and these days, I'm looking at datasheets for 256Gb Flash devices. So much has changed in 20 years!

During the 1990s the problem with counterfeit chips was a low-level problem, with little sophistication from the counterfeiters. But after that the problem has steadily grown in size. Personal experience says that RAMs and processors are the most vulnerable. Most component brokers back then were not terribly reliable or well informed about counterfeit. We once saw the exact same counterfeit processors on two occasions from two different brokers! The seller of the chip never even thought to remove the little pencil marks we made on the counterfeit components. But lately, counterfeit has become a huge problem, sucking up more and more resources.

What trends in obsolescence management have you been observing in your industry?

Thales operates in the industrial, defence and space areas. From about 2000 onwards, we have seen a slow increase in obsolescence management requirements from customers in SLAs (service level agreements), where in most cases it was a one-line statement, almost as an afterthought. From 2006 onwards it became much more of a concern to the customer, and from 2010 onwards it has solidly occupied a corner of the SLA.

Our customers have become noticeably much more educated about obsolescence management since 2008.

Part of managing obsolescence is educating the customer. To this day, we still have problems with customers who are unable to clearly articulate their SLA needs; mostly it has to do with responsibilities and who will take on the different costs resulting from obsolescence management.

Ten to fifteen years ago, obsolescence management costs were small compared with now. These days, even a minor redesign of

a PCB under configuration management can cost over €300k.

The largest drains on a budget are the verification and validation of the product – mostly caused by the massive increase in complexity of the semiconductors used, and subsequently the amount of software running on them.

Interestingly, the cause of the majority of obsolescence problems is still the same: silicon! The more transistors on the chip, the shorter the lifecycle will be. The cause is still the advancement of production technology that is driven by a need to stay profitable in a highly commoditised market.

The bottom line is that the customers are becoming increasingly more obsolescence management savvy, but they still have problems understanding the lifecycle of products, as well as the cost of maintaining the products beyond 10 to 15 years after production ceases.

Obsolescence management is now unavoidable as the majority of new contracts offered in the defence and public transport world are extending the lifetime of the existing products, which sometimes happens at great expense due to the advanced age of the system.

There will come a point where continued maintenance of an old system is more costly, both in time and money, than the purchase of a new system.

Are there any industry practices around obsolescence that you would like to see improved? Please explain.

I would like to see the misuse of Product Change Notices (PCNs) and Product Discontinuation Notices (PDNs) eliminated. If you read PCNs carefully enough you will see that some of them are in reality PDNs. Some of the changes detailed in the PCN result in enough testing that there is little practical difference with a PDN! Another complaint is the wording of some of the PCNs, where it is not clear what is being talked about and what changes are being made to the affected items. Some of the information dumps occur in the form of Excel worksheets, resulting in unreadable 3-point text. Printing on A3 or A2 paper does little to help. Some of the guiltiest companies are not small!

Now for something positive! It's the growing use of Not Recommended for New Design (NRND) by manufacturers; it is a kind of pre-obsolescence notice for that difficult space between EOL = 3 and EOL = 4. Typically, it is issued two to three years before obsolescence is announced, but gives the consumer a chance to design it out in a controlled, cost-efficient and timely manner.

What changes would you like to see chip manufacturers make to address future obsolescence challenges?

I would like to see the use of NRND (Not Recommended for New Designs) statements increased. One or two of the large chip manufacturers – you know who you are, and I love you for it – do this, but more of them need to get into the habit. Sometimes it's called a 'Pre-Obsolescence Notice'.

When the silicon die is revised, there tends to be very little hard information in regards to Form Fit Function (FFF) compatibility. I know this is very difficult for a manufacturer to produce as it introduces liability on their part, but it really is needed for the customer to estimate the amount of work needed to implement it.

I would like to see more manufacturers starting programmes where a handpicked subset of chips is selected for lifecycle elongation.

The increased use of die-banking by manufacturers is a welcome trend, but I would like it to be openly stated so people are aware that there is a finite stock available, and receive a rough estimate of when it is expected to run out. A significant portion of obsolescence is due to the semiconductor fabrication process being discontinued, not the ability to assemble and test the components. This is not a solution, but a way of extending the component's lifetime.

I would also like to see semiconductor companies set up specifically to continue soon-to-be discontinued semiconductor processes and IP to carry on production of selected lines of semis.

Specifically, what effect will the wave of chip manufacturer consolidations have on obsolescence?

Ninety-five per cent of the time, consolidation for component consumers is a disaster, especially when a venture capital company is involved. In my life four things are guaranteed: death, taxes, obsolescence and obsolescence due to mergers.

The net result of consolidation is a portion of the combined portfolio becoming obsolete and a reduction in availability and possible alternative sources. Unfortunately, consolidations are inevitable. If you follow the merger's cause and consequence chain back to its origin, you'll inevitably find shareholders trying to make immediate money or salvage what they can from their investment.

When consolidation is mentioned, I imagine I can just see the 'Silicon Grim Reaper' stepping out of the shadows to loom over the new company, slowly looking down at it, considering his options. He then gets to work, raises his scythe, and seemingly at random he shaves products off and watches them disappear from reality.

What impact do government regulations have on your obsolescence purchasing practices? Please explain the differences.

Since that fateful day in May 2012 when the US government released the findings of its survey of its warehouses, everything has changed.

We now have AS6081 and AS9120. Our customers are now asking more probing questions and our SLAs have become more littered with AS-this and ISO-that. This is resulting in a two-tier system, where moving from the 'have nots' to the 'do haves' is hugely disruptive and expensive.

Between 2005 and 2011 the RoHS regulation forced us to make huge all-time buy of tin-lead solder (SnPb) ball grid arrays (BGAs). The products I support and care for are telecoms backbones and defence electronics, which will remain SnPb for many years to come. For both we are claiming exemptions due to their intended use case. There were waves of SnPb BGA obsolescence in those years, forcing repeated exercises in last-time-buy purchases vs re-balling Sn BGAs. Interestingly enough, the re-balling lost to the LTB every time due to the limited production lifetime of those products.

So far, REACH legislation has had minimal impact on our purchasing practices due to RoHS legislation introduced in the early 2000s. The introduction of RoHS legislation forced a Thales-wide effort to eliminate cadmium and chromium, both of which have impending REACH sunset dates. What REACH legislation has done is improve our component approval process and also our

health and safety reports on our products. One day there will be a substance added to the candidate list that will cause a problem.

From your viewpoint, what should the future of obsolescence look like?

I would like to see:

- More cross-licensing of single source parts.
- Clearer text descriptions used in PCNs and PDNs so obsolescence is not hidden.
- More manufacturer websites publishing information openly and clearly about obsolete and soon to be obsolete parts.
- Accreditation and formal recognition of obsolescence management. (IIOM is working on this – hint, hint!)

Is there any advice or suggestions you would like to share based on your experience with obsolescence?

The experiences I want to share are not about the components themselves, but about the information required to manufacture, produce and support the products.

People need to realise that the most dangerous form of obsolescence is the loss of employees, or rather the loss of knowledge.

If a component becomes obsolete there are always methods of resolving the issue, but when knowledge leaves the building for the final time, there is often no way of replacing it. It is not quite 'game over', but in some cases it can cripple your production and support of that product, drastically reducing the product's lifetime and sometimes causing default on SLAs. So, if you have staff that are within five years of retirement or are in poor health, sit down with them, make a knowledge-priority list and get it out of their heads in that order.

Formal configuration management (CM) may seem like a pointless exercise and a waste of time, but five years down the line you will wish you had it. Executed properly, CM allows you to rewind the clock to any point in time and track all those little engineering change requests that people forget about. The lack of a formal CM system will also hamper your customer negotiations, as some are now insisting that it be performed. I have items in our CM system I completed two years ago that I have no memory of, but there it is, the 'before' and 'after' with my name attached to it.

In this job it pays to be a 'jack of all trades', and is even more interesting if you like the idea of being an 'information archaeologist'.

My top 5 tips:

1. Make friends with Stores (warehouse); they know where stuff is.
2. Walk down every aisle in Stores to get an idea of what is there and what it looks like.
3. When Logistics makes lists of stock items to scrap, make sure you get to see it before it really is scrapped. You may catch something that should not be scrapped.
4. Know where your old CAD data is and know what it is. If it is not in your CM, make sure it is backed up.
5. Talk to everybody and cultivate strategic people who know stuff. You will be talking to them.

Oh, and beware of the digital dust. It gets everywhere.

SATU VIRKKUNEN
SENIOR PROJECT MANAGER

KONE TECHNOLOGY &
INNOVATION

Please tell us about your professional background.

I started my career within the electronics industry at Nokia Networks' base station factory in Oulu, Finland, in their purchasing department, back in 2000. Their Global Sourcing group was established in 2002, and I joined that team as a sourcing manager for memory, and later on for analog and logic ICs. In 2005 I had the opportunity for a six-month job rotation to Suzhou, China, and when I returned to Finland I realized that I wanted to add a more international aspect to my work. I took the opportunity to move to Dallas, Texas, USA, in the summer of 2006 and worked with one of the best teams in the world for an amazing two years. In 2008 I changed companies and joined a US-based component manufacturer, Anaren Inc., where I was a supply chain manager for their Wireless business unit in Suzhou, China, for three years. Five years ago I joined KONE, the world's leading People Flow® solution provider and maker of elevators, escalators, and automated building doors. I stayed in China for three years, and then two years ago moved permanently back to Finland. At KONE I am leading a global PCBA category team and working very closely with R&D, supporting them with scouting new technologies, solutions, and suppliers to work with.

Are there any industry practices around obsolescence that you would like to see improved? Please explain.

A general standard in product obsolescence today among chip manufacturers is to provide customers six or 12 months' notice to place LTBs and another six or 12 months to have the products delivered. For an industry like KONE's, six months is too short of a time; sometimes even 12 months feels like pushing the limits. For example, there are a number of spare part demands that need to be estimated to cover the next 10 to 30 years with different scenarios. Moreover, there needs to be a decision on whether there will be re-design activities started or not; whether we need more resources to do the re-design; is there need to touch the software of the device or the whole system; is re-certification needed for the product; etc. All these decisions require time.

Inventory carrying costs can become quite remarkable when trying to keep up with all the changes going on in the semiconductor industry, if the component and manufacturer selections are not done right. I have thought that it would be so much easier for our industry if there were either a consortium of the main manufacturers that would keep the old processes and products alive, sharing the fixed costs together, or alternatively some companies that would always continue the old processes for mainstream industrial-use components once the bigger players exit. Moreover, the leading-edge companies could concentrate on developing something new and exciting and not leave us in an eternal loop of re-designing our products or making huge LTBs. There are already some companies that have the capabilities to continue production of some products, but since there is not much competition on that front, the costs of the old components are significantly higher than what the original manufacturers can offer.

Increasing bill of material (BOM) costs of a product can be a tough decision to make since the material costs and R&D costs usually come from separate budgets. Increasing the BOM cost quite often means either lowering the profits or convincing end customers to pay higher prices, whereas R&D resources typically do not affect the material costs or sales prices directly.

What changes would you like to see chip manufacturers make to address future obsolescence challenges?

It would be great to see innovative alternatives

to the old-fashioned LTBs. I do not have a ready solution to fix some of the challenges we frequently face, but it would be fair, in my opinion, that the chip manufacturers would also think of their responsibility towards industrial customers and how to help manage the costs related to obsolescence management. Within the elevator/escalator/ automated building door industry there are multiple certifications that are needed for electronics used in the system, and having to re-certify the system or parts of it every couple of years also adds significant costs to customers like KONE. One potential solution could be that the chip manufacturers and distributors work closer together and perhaps execute more die bank deals to delay the customer from having to place LTBs.

Specifically, what effect will the wave of chip manufacturer consolidations have on obsolescence?

So far the consolidations have not brought a whole lot of changes for us, but the understanding is that there will be a greater focus on innovations and developing something new rather than maintaining the old processes within those companies that have been consolidating lately. There are multiple scenarios that can happen. I think one of the scenarios is that there will be much clearer separation that is shown in the product offering between those companies concentrating on developing the new and cool stuff and those concentrating on keeping up the production for the older technology for customers.

From your viewpoint, what should the future of obsolescence look like?

For me, the ideal world with chip manufacturers would be such that the upgrades from previous technology to the next would be invisible to me, no matter what the end product. I should not have to worry about backwards compatibility of the software or IOs or having to re-certify my end product again and again. Therefore, there will be no need for obsolescence management! But realistically, for industrial customers like KONE, six months to place an LTB order is a really short time. We do not have huge reserves of electrical engineers in-house; any change to the system level software needs an internal expert, and that kind of resource is always far from developing something new. If product obsolescence is mandatory for a given supplier, it would be very helpful for our customers if another company would be able to continue the production immediately on behalf of the original manufacturer. As mentioned earlier, even with the options we have available today, this is still affecting us and/or the end customer, since the pricing is completely different than what was offered by the original manufacturer with the original deals.

Do you have any advice or suggestions you would like to share based on your experience with obsolescence?

I believe there is a business opportunity for smaller scale companies with a focus on purely industrial customers to ensure long-term availability on older-generation memories and processors, for example. Those tend to be the toughest to replace in any given design, especially when the software-related dependencies are complicated. As mentioned previously, as much as the world needs new innovations and cool new gadgets, more memory, faster processing, etc., there is still a whole lot of demand for old-school technologies. It would be great if chip manufacturers would also think of innovative ways to reduce the burden of obsolescence management together with industrial customers and distributors. There is a good, steady, long-term business awaiting those who want to be part of that. I also think that the possibilities of using 3-D printing as a solution to our challenges needs to be considered further. Could this be one of the solutions for electronics as well?

FOM
Future of Obsolescence Management

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