



President's Welcome

Dear friends and members of IIOM,

We are now less than 60 days from our 1st ever international IIOM event in the United States and we are finalizing the last details of the event. If you missed it, we announced the 6 different workshops that we will be running on Monday. These workshops are included for all delegates and do not cost extra. We are even extending 2 of them for our virtual audience so if you are unable to make it in person, you will have the opportunity to attend 2 of the workshops (1 in the morning, 1 in the afternoon).

I have been asked several times in the past week why someone should attend this symposium. The most obvious answer I give them is networking and knowledge sharing. If you have only ever been to the European events, this symposium offers a unique opportunity to connect and engage with more industry professionals, experts, and decision-makers from the United States than ever before. Our programme has some amazing topics and delegates will benefit from three and a half days of presentations and workshops led by experienced professionals, providing insights into the latest trends, best practices, and case studies in obsolescence management.

Now, as we head into the September, airfares have been dropping and its even cheaper now to travel. So I hope to see everyone in person at the end of October in Williamsburg, Virginia. Williamsburg itself is a beautiful town and our hotel is in the middle of Colonial Williamsburg, preserved as it was when it was a thriving British Colony. For those unable to travel, I hope you will attend virtually. All of the main session presentations and 2 of the workshops will be provided virtually for the 1st time. We will have all new ways for virtual delegates to interact with both each other and with the in-person audience. I am even developing some pre-symposium interviews in the morning before we get started for our virtual European audience. Stay tuned for details!

As always, more information about the event will continue to be posted on the conference website, <https://www.iiom-ussymposium.com>.

Thank you and I look forward to seeing everyone in 2 months at **Colonial Williamsburg, Virginia!**

Timothy "TJ" Zitkevitz
President IIOM International and Chair of IIOM US Chapter

DIARY

10 - 11 September 2024

IFO - IIOM France Autumn Seminar, Orléans, France

19 September 2024

The Electronic Component Show, Kassam Stadium, Oxford, UK

30 September - 1 October 2024

IIOM UK Member Meeting, Swindon, UK

9 - 10 October 2024

Engineering Design Show, Coventry, UK

10 October 2024

COGD Member Meeting, Esslingen Germany

21 - 24 October 2024

IIOM Symposium, Williamsburg, Virginia, USA

12 - 15 November 2024

electronica, Munich, Germany

18 - 20 November 2024

Allan Webb Ltd - Obsolescence Management IIOM Certificate Course, Brockworth, UK

26 - 28 November 2024

CMCA(UK) - Online Short Course in Obsolescence Management at IIOM Associate Level

27 November 2024

AMSYS IIOM Associate Grade Certification, Munich, Germany

26 February 2025

AMSYS IIOM Associate Grade Certification, Munich, Germany

3 - 4 March 2025

IIOM UK Member Meeting, Derby, UK

31 March, 1 & 2 April 2025

Ifo-IIOM France Obso-Days Conference, France

12 June 2025

AMSYS IIOM Associate Grade Certification, Hamburg, Germany

23 - 24 June 2025

IIOM UK Member Meeting, Bristol, UK

17 - 18 November 2025

IIOM UK Member Meeting, Milton Keynes, UK

25 November 2025

AMSYS IIOM Associate Grade Certification, Hamburg, Germany



The summer months are almost over, and we hope that you can start the fall with renewed energy!

COGD has had a successful few months, during which two quarterly meetings have already been held and the next events are already being planned.

In July, we were able to hold our 2nd quarterly meeting at our member company TQ-Systems in Seefeld. After a great evening event at the Wörthsee with mega weather and sunset, we were able to take part in exciting presentations the following day. At this event, we had inspiration to offer an interactive part, breaking into 4 groups to discuss different topics, so that each participant could contribute their expertise. The topics discussed included AI and awareness of OM in management. This was very well received by everyone involved and the participants were able to take back ideas to their companies. Finally, our host invited us on a tour of the electronics production facility. Many thanks to our host TQ-Systems and to all participants for a successful event!

Our 3rd quarterly meeting will again take place at one of our members. On 10th October 2024 Festo SE invites us to Esslingen. If you are interested in attending, please contact our office.

In November, the next highlight awaits us at electronica in Munich. We have decided to offer another Obsolescence Day with a lecture program on 15th November 2024. The member companies can present themselves in various lectures and are available for an exchange of expertise at their exhibition stands. Further details will follow.

We look forward to welcoming you to our planned events and wish you a good time!

Stefanie Kölbl
Member of the Board COGD

Update from IOM France Chapter

2024 Autumn Seminar. The French Institute will be holding its autumn seminar in Orléans on 10 and 11 September. Following its tradition, the seminar will feature three series of presentations: industrial, academic and Working Groups. Two new Working Groups have been set up following the Obso-Days conference in April 2024: Life Extension Index and Influential Communication.

This seminar will also provide an opportunity to discover a special event organised by the IFO's 'Junior Experts' group. Born out of a desire to diversify during Obso-Days 2024, this initiative by the young members of the IFO has been enthusiastically welcomed. We cannot wait to find out what they have in store for us.

The Institute's Annual General Assembly will also be held on 10 September.

Obso-Days 2025. The Institute's next conference is scheduled for 31 March, 1 and 2 April. The venue has already been chosen and the Institute's Board has begun preparations. The venue will be announced to members at the autumn seminar, when they will also discover the key moments of the conference.

International collaboration. The first fruitful exchanges between our academic members and their Indian, Brazilian and American counterparts should also be noted. The IFO strongly encourages these collaborations, which are helping to disseminate obsolescence issues within the scientific community and engineering schools around the world.

Marc Zolghadri
IOM France Chair



October 21-24, 2024
Colonial Williamsburg, Virginia

For more information [click here](#)





Follow IOM on LinkedIn for the latest updates
www.linkedin.com/company/10361648

IOM UK Chapter Update

The UK Chapter had a successful member meeting on 17th/18th June in Leicester, sponsored by Force Technologies and enjoyed great presentations.

The **IOM webinars** have been proven popular, with good attendance and feedback received. Thank you to our speakers and thank you to all our attendees. Our latest webinar was on Software Obsolescence. If you have missed the webinar, please login to the IOM UK website → Knowledge → Webinars. We are currently organising the next webinar and will update you in due course.

Thank you to those companies participating in the **UK Benchmarking initiative**. The companies have now been introduced to each other and we are looking forward to hearing their lessons learnt in 2025.

We will initiate further benchmarking initiative in 2025 for those looking to take part, and are hoping that, confidentiality permitting, to have reports on the benchmarking exercises at our February 2025 meeting.

New Council Election

We have started the process of forming the new UK Chapter Council. Thank you very much to everyone who is looking to stand for Chapter Council. It has been great to see so many nominations.

We are now asking for IOM UK members to **vote to form the new council by 24th September**, and will announce the new council at the next members meeting. The council will then be in place from 1st January 2025.

The next **UK Member meeting** is on **30th September/1st October 2024** in Swindon, sponsored by SiliconExpert. We have an exciting agenda with topics, such as “Designing for Sustainability”, “Global Semiconductor Market by Malcolm Penn” as well as our panel discussion on “Sustainability in Industry” and many more.

Stuart Broadbent (IOM UK Chair) and Manu Grundy (IOM UK CTO)

Chief Technical Officer Update - IOM International

Dear Community, dear IOM Members!

I hope you've enjoyed, or are still enjoying, your summer holidays.

Please find below my brief update on CTO activities.

We have made some corrections and improvements to our website www.iom.global. As always, if you find any inconsistencies or errors, please feel free to send them to me (martin.steinleitner@syliom.net) or to admin@iom.org.

Our activities for the Symposium in the USA are progressing and we really hope to see many of you there. We have now finalised our agenda, including the workshops, panels and sessions, and I can promise there is interesting and in depth content on obsolescence management.

As an obsolescence management community, you can be proud that we are still growing. All our chapters are attracting new members. If you would like to join another chapter meeting because you see presentations of interest, please contact the relevant board committee. They are always happy to invite you.

As mentioned in previous newsletters, we continue to explore setting up new chapters. Discussions are continuing with Australia and there is also interest in Saudi Arabia.

Martin Steinleitner
Chief Technical Officer, IOM International

Professional Development and Individual Membership

The IOM promotes the adoption of Obsolescence Management best practice and actively promotes the professional development of practitioners the individual members of IOM, in accordance with Internationally recognised standards in such as IEC 62402:2019.

Member individuals can join IOM as an Associate (AIOM), Member (MIOM) or Fellow (FIIOM). There are also categories for Honorary and Retired members.

Do not hesitate to contact your IOM Chapters for guidance with applications. The Advisors are members of the IOM Professional Standards & Membership Committee and can call on the Committee's resources for wider advice and support.

IOM France Luciano Lustosa de Siqueira professional.development.fr@iom.global

IOM UK Luciano Lustosa de Siqueira professional.development.uk@iom.global

IOM India Naveen Bajpe professional.development.in@iom.global

If you are a member of IOM Germany (COG-D) and IOM USA please contact any member of your Chapter Council with your initial enquiry

Luciano Lustosa-de-Siqueira
Head of Professional Development

CONVERGE[®]

AN ARROW COMPANY

Who Should Take the Lead in Managing Obsolescence?

Converge, and the [Future of Obsolescence Management \(FOM\)](#), conducted a poll asking the community who should lead obsolescence management. Only 13% felt manufacturers should lead due to their lifecycle control, while 9% thought supply chain partners should take charge because of their intermediary role. 17% believed end users should lead, given their ultimate control and need to monitor product success. A significant 61%, however, advocated for a collaborative approach involving all stakeholders.

Manufacturers control the product lifecycle and are suitable for managing obsolescence, while supply chain partners have comprehensive supply chain insights. End users, responsible for their product's success, need to be proactive but face communication challenges regarding Product Change Notifications (PCNs) and end-of-life (EOL) notices.

A collaborative effort combines the unique strengths of each stakeholder to ensure a resilient supply chain. Effective management requires clear communication, transparent information sharing, and robust support systems. Trusted partners and databases can help navigate obsolescence challenges. The strong response for a collective approach emphasized that only through joint efforts can solve future obsolescence management.

Who should take the lead in managing obsolescence?



December 2024 Newsletter

Content for the next edition of the IOM Newsletter should be sent to admin@theiom.org by 15th November.

REACH UPDATE

Disclaimer:

The contents of this briefing are made subject to the conditions that neither the writer or their employer shall take responsibility for any errors or omissions contained within, and that the reader takes due care in managing the information correctly, and if in any doubt as to the implications of REACH on their business, takes appropriate legal advice. The writer is not a lawyer, and this briefing document does not constitute legal advice.

General Updates:

PFAS – Per and Poly Fluoroalkyl Substances:

Global efforts to ban the 10K+ PFAS chemicals are still progressing slowly. A number of EU countries submitted a Restriction report on PFAS under EU REACH, meetings of the SEAC and RAC committees now regularly occur to look at industry specific challenges to what they are referring to as a 'Universal PFAS Restriction'. The UK is following suit, but has defined PFAS in their Restriction differently – Meaning less chemicals are in scope. The US and other jurisdictions are also drafting laws against PFAS.

Hexavalent Chrome in EU:

With the deadline looming some users of hexavalent chrome have voiced major concerns. Some uses would no longer be possible after the current authorisation lapses unless a new decision is given by the EU Commission.

Hexavalent Chrome in UK:

While the UK never annulled hex chrome as the EU did, supply chains are linked and the concern is apparent in the UK too. The HSE also appear to be granting authorisations slowly as the deadline looms.

Lead:

No new Changes to report - Was added to the 11th Recommendation for inclusion of Annex 14. Following this consultations and lobbying ensued. A note has surfaced from a Mr Breton of the EU Commission stating that the Commission does not anticipate adding Lead to Annex XIV of EU REACH. Whether this will change following EU Parliamentary elections is unclear. The UK anecdotally appear more sympathetic to industry and DEFRA/HSE have claimed they would differ from the EU in the event of wholesale bans.

REACH Legislation Update:

Still No Change to Report - The proposed changes appear to have been removed from the commission's work programme for 2024. Presumably because of the upcoming EU Parliamentary Election. Due to the significant criticism faced from NGO's that REACH is not achieving its aims, it seems likely that the change will be looked at once the new Parliament comes in rather than an attempt to rush through something in the interim.

UK REACH:

Still No Change to Report - HSE published their report of activity in 2022/23 and work programme on 15th Feb. The work programme states HSE will publish a draft recommendation for Authorisation by 31st March 2024. They also highlight they will complete the 2 ongoing proposals (listed below) by May (Lead in Tattoo Ink) and October (Lead in Ammunition) 2024.

The Numbers – Previous Vs Now:

Listing	EU REACH May 2024	EU REACH Aug 2024	UK REACH May 2024	UK REACH Aug 2024
SVHC (Candidate List)	No Changes – Still 486 titles under 240 Entries	Now 487 titles under 241 Entries - Bis(α,α-dimethylbenzyl) peroxide added 27th June 2024	No Changes – Remains at 303 Substance Titles, listed under 209 Entries (since UK REACH Introduced)	Still No Changes – Remains at 303 Substance Titles, listed under 209 Entries (since UK REACH Introduced)
SVHC Recommendation for Authorisation List	No Change since Feb – 237 substance titles under 122 Entries	Still no change – 237 Titles under 122 Entries	No Change – Still at 3 Entries	Still No Changes – Still at 3 Entries
Annex 14 (Authorisation List)	Still no changes – 141 Substance Titles under 59 Entries	Still no changes – 141 Substance Titles under 59 Entries	Still no changes – 97 Substance Titles, listed under 54 Entries.	Still no changes – 97 Substance Titles, listed under 54 Entries.
Registry of Restriction Intention until Outcome	No Change – Still 65 Entries	No Change – Still 65 Entries	Still no changes – 2 Entries (Lead in tattoo inks/permanent makeup and Lead in civilian ammunition uses)	Still no changes – 2 Entries (Lead in tattoo inks/permanent makeup and Lead in civilian ammunition uses)
Annex 17 (Restriction List):	No Change - Still 78 Titles under 73 Entries	No Change - Still 78 Titles under 73 Entries	No change since February – 74 Entries	Still No changes – 74 Entries

*Data Compiled 19/08/2024

Rhys Williams – BAE Systems (Land) UK

Obsolescence Management and a game of golf!

In a previous IOM presentation I compared the understanding of football (that's soccer – US members!) with the understanding of obsolescence management.

After further thought the game of golf also has similar lessons for us all!

- If the game (obsolescence management) seems too easy, then a surprise maybe in store – like a water hazard!
- The course (project) although the same plays differently each time you play - don't think you have mastered it
- It is better to play (work) with others
- Do not anticipate another good shot (resolution) because you just made one
- Obstacles like trees and bunkers (last time buys and zero notice obsolescence arisings) need careful management
- Seasoned professionals can also make errors - beware!
- Good quality clubs (tools) are a massive help
- Join a club (IOM) and learn from better players
- Men and Women can be equally good
- The brain (software) is very important
- A good approach shot (strategy) needs to be completed with a good putt (delivery)

Obsolescence management and golf are good exercise for the mind - apparently!

Ian Blackman IOM
Managing Director, Elan Business Support

Member in the Spotlight - Christopher Holder, Rebound Electronics

What do you enjoy most about Obsolescence Management?

Obsolescence management is a crucial strategy for long-term engineering and production success, the challenge of proactively identifying and working on plans to mitigate the issues that rise for long life cycle products. I find the challenge of navigating parts availability, solutions available, and counterfeit avoidance quite fascinating.

What is your biggest concern for the discipline in the near future?

The biggest concern for me is the continued drive in technologies to make things smaller and faster, this will mean a hike in the number of components that will go obsolete. At some point with all the planning and risk mitigation the number of devices going obsolete will have an impact on production, this will result in costly redesigns in products that have a shorter life span even in the

What is your favourite holiday destination?

My favourite holidays are to hike and walk the fantastic countryside and mountains within the UK. My wife and I have found some of the most amazing places in Scotland, Lake District, Yorkshire, and the best of all North Wales.

What do you do to relax?

For what I do for relaxation will have to be visiting the beach to listen to the sound of the waves, when work and life gets busy there is nothing better than finding a remote beach and just relaxing.

What would have been your dream career if you did not follow the path that you did?

A dream job would have been completely different, I would love to have owned a farm. Driving around on my tractor growing crops and farming animals would have been amazing. But I ended up in electronic engineering and then Quality management so slightly different.



Member in the spotlight

To add a more personal feel to the international newsletters we recently introduced 'Member in the spotlight', giving members the opportunity to tell us a little bit more about themselves.

To participate you will be asked a few questions on your obsolescence activities as well as a handful of more general questions about yourself and your life outside of your day job. Please contact admin@theiom.org if you are interested in participating. If we receive too many entries, some will be carried forward to the next edition.



October 21-24, 2024: Colonial Williamsburg, Williamsburg, Virginia

SPONSORSHIP OPPORTUNITIES

Becoming an official event sponsor is a great way to enhance your organization's visibility to leading industry professionals both before the symposium and onsite at the event.

Sponsorships include Logo visibility in the following areas:

- Conference website & Conference App
- Sponsor video loop -shown during Plenary Session
- Onsite signage & materials

There are sponsorship opportunities ranging from \$1,000 USD-\$10,000 USD; **Principal Sponsorship**, Custom Notebook & Event Pen, Receptions & **Celebration Dinner** are all options to increase brand and organization awareness. Please contact Katie.Curtner@ARCTOS-US.COM to discuss setting up a custom sponsorship for your organization.

EXHIBITION OPPORTUNITIES

The Iiom Symposium provides an opportunity for engineers, leaders, research scholars, scientists, students, technologists, and solution providers to exchange ideas and to explore recent advances in all aspects of Obsolescence Management from all over the world. A booth at Iiom International Symposium is just the beginning! Promote your organization and network with leading industry professionals.

Every Exhibitor package comes with a full suite of inclusions;

- One (1) 10x10 ft (3mtx3mt) exhibition area (Exhibition hall is carpeted)
- Two (2) Exhibit Hall Staff Badges-Gains access to all events held in Exhibit Hall
- Exhibit Hall Security
- Standard 8-foot (2.4mt) back drape and 3-foot (1mt) side drape
- Organization and Product listing in the Final Program
- Organization listing on the event mobile app
- Lead Retrieval App with Onsite Technical Support

Conference refreshments, receptions and lunches will be held in the Exhibition Hall, maximizing the opportunity for exhibitors and attendees to network and interact. Don't miss out on this well respected and important event in the Obsolescence community!
[Reserve your booth today @ Iiom 2024 \(iiom-ussymposium.com\)](https://iiom-ussymposium.com)

Exhibition Fees:

Iiom MEMBER \$2,700, per booth

NON MEMBER \$3,000, per booth

Business Continuity in Focus: CMCA(UK)'s Long Term Storage Solution



www.cmcauk.co.uk

In today's dynamic business environment, staying competitive requires preparation for the unexpected. CMCA(UK) has taken a significant step towards ensuring business continuity with its cutting-edge Long Term Storage (LTS) facility. As supply chain disruptions rise, the need for reliable solutions has increased. CMCA(UK) addresses this by "time-locking" sub-assemblies, printed circuit assemblies (PCAs), and components in a secure environment, extending the lifecycle of clients' products and avoiding costly redesigns.

A key feature is the dual-site storage, splitting stock across two remote locations for enhanced safety. This strategy has become the preferred choice for most customers. The facility includes nitrogen cabinets, dry storage, and electrostatic discharge protection for valuable items, ensuring product safety. CMCA(UK)'s rigorous stock management ensures quick dispatch and seamless business continuity.

The success of the LTS facility and dual-site capability highlights the dedication of CMCA(UK)'s team to providing reliable, future-proof solutions. With a 100% client retention rate and ongoing growth, CMCA(UK) sets the standard in business continuity and risk management, helping clients stay resilient in an unpredictable world.



Wafer fabrication process discontinued? – Long-term preservation as a supply chain strategy

Given the ever more accelerating technological developments and their related obsolescences and production discontinuations, many industries, especially in the field of semiconductor manufacturing face increasing difficulties, such as production bottlenecks. Simply adjusting to the new technological demands is certainly a viable strategy but only for industry high rollers, everybody else requires a more economic strategy to support their supply chains. A mere N2 drypack storage does not prevent the natural aging processes. But by using the TAB®-Plus procedure of ALTER | HTV, any company can store their highly sensitive emergency surplus stock, such as soon to be barely available 6" wafers, in secure conditions that will keep them as pristine as possible and ready to process straight out of storage.



Pegasus Components GmbH has a new service to find or offer obsolete components.

Part-Locator.com offers a simple and uncomplicated component search, ensuring users can quickly find the components they are looking for. In addition, it provides free of charge integration of your free inventory and excess stock, allowing businesses to seamlessly manage surplus stock.

Part Locator also specializes in purchasing or promoting your surplus and free inventory, generating additional capital and minimizing waste. With expertise in logistics and customs clearances, it manages the import and export of goods, ensuring smooth and efficient international transactions.

With access to its own warehouse and a network that includes millions of items, thousands of suppliers, and customers, Part Locator offers unparalleled opportunities for sourcing and selling.

These comprehensive solutions are designed to enhance business efficiency while optimize inventory management, and much more.

Part Locator can be tested and tried out at the domain www.part-locator.com.

Standards and Accreditation Update – August 2024

I continue to support IOM as a member of several National and International standards committees related to the Obsolescence Management discipline. These include DMSMS (Diminishing Manufacturing Sources and Material Shortages), Counterfeit Avoidance and Technology Management Plans. I am currently the Convenor of the IEC TC56 Maintenance Team 20 for Obsolescence Management (OM) and committee member of the IEC TC107 Process management for avionics which includes working groups on these management plans. Since my last report proposals have been accepted for IEC62402 into three parts and work has started with all three parts creating Committee Drafts (CD). IEC62402 has two new parts being developed; 'Part 2 Forecasting obsolescence cost' and 'Part 3 Notification and exchange of information. 'Part 1: Policy, plan and process' is to be based on the current standard published in 2019, integrating the new parts into the obsolescence management discipline. IEC62402 Part 1 is to develop an annex for an OM capability assessment scheme with the IECQ, for the ADHP industries.

New subjects and terminology being developed with other established standards committees, such as 'Information and Cyber Security management systems' (ISO/IEC JTC 1/SC 27) are to be identified for enhancing the obsolescence management discipline.

Graham Goring, IOM Head of Standards and Accreditation

Are Date Code Restrictions Still Relevant?



Rochester Electronics recognises that semiconductor date codes, introduced in the 1960s, were initially vital for ensuring traceability based on manufacturing dates, processes, and materials, with an expected "sell-by" date of 2 to 3 years. However, as technology and storage methods have evolved, date codes have become less reliable as indicators of component quality, often leading to the unnecessary rejection of perfectly viable parts. Years of extensive research and testing by industry leaders, including Rochester, have demonstrated that with proper long-term storage, components remain reliable and high-quality well beyond their original date codes.

We want to hear your thoughts! Are date code restrictions still relevant? What do you consider a safe shelf life for semiconductors? Your feedback is invaluable to us. Please take a moment to complete our market research survey and share your perspective. Your insights will help shape the future of semiconductor obsolescence management.

Take part in our survey: <https://www.surveymonkey.com/r/datecodes>

Find out more: www.rocelec.com

IOM Welcomes New Corporate Members



It is a company dedicated to Multidisciplinary Engineering and Consulting services for the railway sector.

Specialized in Design Projects, Modernizations, Wagons, Commissioning, Vehicle Maintenance and Additive Manufacturing.

With the extensive experience accumulated in the transportation sector and our highly qualified team, we are committed to developing solutions aimed at safety, economic viability and environmental sustainability.



A Procurement Agency and Franchised Distributor, Milano Brothers Group has successfully served major international clients operating in the high technology fields (Space, Aerospace, Military, Industrial, Telecommunications, and Power Generation sectors).

MBG prides itself on providing the highest quality in material and service, experts in providing solutions for obsolescence Management and dedicated in exceeding expectations in managing complex supply chains.



SET offers a root-cause investigation and repair service aimed at resolving obsolescence issues.

Audited to GM/RT2450 and ISO9001, we have identified the cause of several repetitious problems for our customers and in the process improved their equipment reliability.

A key to our success is our flexible approach to our customers' technical and scheduling requirements, while never compromising our high standards.



Aeroderivative Gas Turbines (AGT) is a business segment of Siemens Energy. These turbines are adapted aviation jet engines consisting of a compressor, combustor and a turbine, used for power generation and mechanical drives.

AGT is headquartered in Warwick, United Kingdom with five sites across the world. Supporting over 2,500 engines in 81 countries, with over 1,000 employees and a yearly revenue of circa €1bn.

IOM Welcomes New Individual Members

AIOM Nicholas Clark, Mark Houston

MIOM John Dyson, Gary Mathews, Charles Taylor, Jean-Yves Litras, Poulomi Chaudhuri

FIOM David Saul, Stuart Broadbent