Engineering the Future
Tom McGann Memorial Summit

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5th and 6th of March 2017

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in conjunction with the ABU and the AIBD
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Executive Summary

The Tom McGann Memorial Summit was established to bring together all sides of the industry to analyse the requirements for engineering and technical talent in the future and to determine how that talent can best be attracted, developed and retained. The second Tom McGann Memorial Summit was held in Kuala Lumpur on the 5th and 6th of March 2017. The second Summit continued with the theme of the first Summit, which was addressing the skills shortage in the broadcast and media industry.

The IABM conducted a census of individuals working in the industry before the Summit, and a summary was presented at the opening of the session. The Survey re-enforced one of the outcomes of the first Summit, namely that there was not a critical skills shortage in broadcast where experienced engineers and operators were nearing retirement. In fact, the average age of the respondents was 46. The Survey highlighted the issue that our challenge lies with technology disruption, and specifically more general IT skills and that we are competing for talent in a wider market.

The Summit Chairman, Dr Zaki, framed the Summit in that context, namely that we are living in a period of massive disruption, both in how audiences access content and in how the industry manages and distributes content. The Summit sessions identified three factors that we as an industry need to address:

- We need to attract people with passion for what we do. Broadcast is a distinctive place to work, which in the past was characterised as being adventurous. As the industry has matured, we need to ensure that we retain that distinctiveness to attract and develop people with the qualities and skills that we need.

- There is an ‘imbalance’ in how we manage our business: we expect the best from people but do not always invest in training; we emphasise technical quality in standards but not in terms of audience response, as many programmes fall short of audience quality thresholds, and we appeal to all audiences but, like many other industries, our engagement with women as an industry is poor.

- Technology is changing more rapidly than before, and in areas that many are less comfortable with, such as IT and IP, Cybersecurity and Cloud. To survive in the future we need people with skills in these and other emerging technology areas.

- We remain siloed, particularly between creative, operational and engineering functions. We need to be more co-ordinated and collaborative, and have a broader focus on commercial management of our businesses.

With regard to skills, the Summit has identified a market failure in some types of training, notably in the type of training that supports continuous and supplementary education,
rather than very formal academic learning. The challenge is that with declining training budgets the burden of the cost of training may shift to the individual, and they may not have the financial incentive to invest in their own training, professional development and education if broadcasters do not value their skills and reputation.

The Summit assessed different potential approaches in addressing these issues, and as practical steps in supporting the industry in its digital transformation, we have offered five key recommendations:

Recommendation 1: IABM, ABU and AIBD scope the case for creating an annualised skills survey in the region, which can be reviewed in a session during the ABU-DBS annually.

Recommendation 2: IABM, working with other qualified organisations globally such as the ABU and AIBD to define a programme to create an Industry Over-Arching Model for Careers in Broadcast and media technology

Recommendation 3: IABM EF should extend an existing commitment to an industry portal to include the curation of industry content by the IABM

Recommendation 4: IABM should consider how to support informal regional ‘Workflow Innovation’ style groups made up of broadcasters, suppliers and training operators, to encourage the sharing of practical experience

Recommendation 5: IABM, ABU and AIBD set up an exploratory session to identify pilot trial areas for co-operation between media industry, academic institutions and training providers.

IABM and its regional council in APAC will work with ABU and AIBD to build collaboration in the region. Our priority will be to review and promote progress across the five recommendations above and to seek and extend opportunities for broadcasters to grow the capabilities of their staff and businesses. If there is a need to increase technical operator’s awareness of the relevance and impact of the changed workflows and increased efficiency that new systems and platforms support, we will seek to do this by bringing suppliers and service providers closer together in Asia. We will agree how best this can be done alongside existing symposiums and can certainly supplement the short training courses and commercial and academic training and qualifications of providers in the region. Increasing supplier’s exposure to those who use their products and services should benefit all broadcast and media businesses in the region.
Introduction

The first Tom McGann Memorial Summit was held in Switzerland on 24th and 25th November 2014 and was organised by the IABM Educational Foundation, a charitable body supported by the IABM. At the time it was recognised that the issue of a skills shortage was a global one, not just a European one, and the Foundation committed to holding the second Memorial Summit in Asia.

Tom McGann was a broadcast industry legend, and in his career, he encapsulated both the technical depth and spirit of adventure that we associate with broadcasting. He was one of the founders of the IABM, and promoted and represented the interests of technology in the industry through his work and personality.

The aim of the first Tom McGann Memorial Summit was to bring together all sides of the industry to analyse the requirements for engineering and technical talent in the future and to determine how that talent can best be attracted, developed and retained. The focus on developing talent was considered very much in keeping with Tom McGann who entered the industry as an apprentice.

The second Tom McGann Memorial Summit was held in Kuala Lumpur on the 5th and 6th of March 2017. The sheer geographic diversity of Asia represented a logistical challenge, so the Summit was run as a prelude to the 2017 ABU Digital Broadcasting Symposium. The Foundation is indebted to the ABU and AIBD for their support and commitment. Dr Ahmad Zaki Mohd Salleh chaired the summit, backed by Dr Amal Punchihewa from the ABU.

The IABM brought technology suppliers, ABU the TV stations and AIBD the educators together in Kuala Lumpur. Invited delegates included senior representatives from broadcasters across Asia, learning providers, academics and broadcast vendors.

This document summarises the findings of the meeting and sets out a framework and action plan for addressing the issue of skills within the region. The IABM EF opened the Summit with the results of an international Survey, branded “The SCORE”, carried out in the run-up to the Summit, and a summary of the main findings are presented first, followed by the outcome of the discussions at the Summit.
Survey Results

The IABM EF carried out an electronic Survey of individuals in the industry on different aspect of skills levels. A full copy of the aggregated results of the Survey, along with this report is accessible http://www.theiabm.org/training/Engineering-the-future. This section highlights some of the main findings as a precursor to the findings of the Summit.

One first striking feature is the confirmation of the international nature of the industry, in that 22% of respondents stated that their country of origin was different to the country in which they were currently working.

The Survey confirmed that the threat of the imminent exit of skilled engineers and operators is not very significant. The distribution by age chart illustrated that the average age in the industry was 46, and that the proportion of respondents who might reasonably retire within five years is well under 20%.

In Europe the number of contractors, particularly those working for broadcasters in operational roles has been steadily increasing based on anecdotal evidence from both broadcasters and members of the industry. This is backed up by the Survey and just under a
half of all respondents in Europe have been self-employed. In Asia-Pacific (APAC) that figure is significantly lower, at less than one third (i.e. more than two thirds of respondents said that they had never been self-employed). It is notable that of the self-employed for who broadcasting is their primary occupation, there is little difference between Europe and APAC at 16.1% for Europe and 14.1% for APAC. There does appear to be more part-time work in Europe, and when including respondents where broadcasting is not their primary occupation the figures for Europe are 23.4% (i.e. close to a quarter) but 16.9% for APAC. It would be interesting to follow the trends in this response over time.

The difference in educational background is substantial in places. The English-only nature of the survey is likely to be responsible for a selection bias in the underlying sample that is skewed towards higher education but it is notable that over a quarter of respondents in Europe joined the industry after secondary school, that is, as school leavers, compared to 8.5% from APAC. The proposition of respondents who came from a form of further education, i.e. non-tertiary or short cycle tertiary is closer at 17.6% for Europe and 20.5% for APAC.
In Europe the proportion of respondents with a Bachelor’s degree or above is 56.8% compared to 70.9% in APAC. APAC respondents were four times more likely to have a doctorate degree. This points to some relevant cultural differences between Europe and APAC, such as greater acceptance of school leavers into the broadcast industry in Europe or greater commitments to further and higher education in APAC.

Looking at receipt of training, almost 60% of all respondents received training in the first three years of their career, and that the bulk of it, more than 75% was provided internally by employers. This emphasises the self-taught nature of the industry. Very few organisations have professional internal academies so this does perhaps raise a question on the nature of that internal training. APAC had slightly fewer respondents receiving training, at 54.5%, possibly reflecting the higher educational background of staff.

The higher level of educational background may also explain the level of self-confidence in Broadcast skills. 64% of APAC respondents categorised themselves at 8 or more out of 10, compared to 55% in Europe.
Looking at IT skills the profile is more evenly matched between APAC and Europe, but the level of confidence in IT skills is considerably lower than for Broadcast skills – only 10% of respondents in APAC marked themselves at 8 or above, although in Europe the figure was higher at 38%. This may reflect the longer use of IT based systems in Europe.

This need for improvement in IT skills was also reflected in the skills topics listed when asked what areas would help respondents most with their career. The most popular topics were inevitably IP and IT related:

- “IT & IP, especially in the area of coding”
- “IT Security & Networks”
- “IT networking”
- “Internet Streaming Formats - HEVC+HDR/WCG – DRM Technology”
The Survey results do not paint a picture of an industry with a skills-exit crisis, either in APAC or Europe. The Survey does emphasis that Broadcast is beginning to become more like the IT industry with more use of contract staff. Moreover, the SCORE survey highlights that IT-based technologies including IP are more important than ever in Broadcast, yet the industry does not appear to feel very confident in its own skills in this space.
Context of the Summit

The broadcast industry is a comparatively young one - although radio broadcast services started in the twenties, TV services began in the mid 1930’s but were restricted to larger countries, and the relative sophistication of broadcasting was limited. The industry grew rapidly in the 1950s, due to a combination of factors: advancements in consumer electronics reduced the price of radio and television sets and made them a more affordable, mass-market product, and economic growth resulted in a burgeoning middle class that could afford a television and had more leisure time to spend on entertainment. In many countries, there was a political motivation for deploying national and regional services, both as an indicator of society ‘advancement’ and as a practical means of mass communication. The massive growth in the television industry brought swathes of young people into the industry, and specifically within the broadcast engineering and operations disciplines. There was an element of ‘new frontiers’ about this, and the broadcast industry offered the prospect of adventure - regarding new technical grounds but also actual physical adventure in travelling the world selling, setting up or running television operations. Tom McGann was a good example of this, visiting more than 110 countries across his career. These first engineers and operators received initial training in large groups within broadcaster-run training schools combined with on the job experience. Those who passed the exams and selection built into these programmes found demand for their skills on a national and international basis. The people who moved around in this market were self-starters who needed to have creative problem-solving skills in a rapidly growing industry. Vendors worked closely with broadcasters because they had to, and this built up long-term cooperative relationships that have lasted decades. People in broadcasting tend to pride themselves on their ability to adapt, to learn and fix things quickly, frequently in time-critical situations.

These first cohorts of people entering the industry naturally began to age and retire, and the apprentices and graduate hires of the 60s and 70s are maturing. In the early 2010s, the industry realised that they had a potential issue, namely if the key people who know how to keep TV services on air begin to retire, then there was the risk of not handing over the right processes and procedures to guarantee that services stayed on-air. The greater utilisation of more IT-based technologies compounded this concern. If the new entrants were all IT based, and fewer people were entering from engineering courses, would the industry starve itself of the ability to make broadcast radio and television equipment and services? This concern became a hot topic at IBC conferences and was the primary driver behind the first Tom McGann Summit in Geneva. However, that Summit highlighted that the ‘skills exit’ i.e. broadcast engineering skills exiting the market was not the crisis we thought it was, and that handovers to more middle-aged engineers were in place. This should not be a surprise as the industry’s ability to adapt meant that it organically managed this issue, through blending IT and Broadcast Engineering teams and skills. The smart IT guys can quickly learn about
broadcast just as the new engineers of the 50s had to adapt and learn. The Tom McGann Summit highlighted that the key skills challenge was the ability to continue to attract talent into the industry and to compete, sometimes on salary, with the IT industry. Broadcasting has been accustomed to attracting and recruiting the very bright and adventurous but the world has moved on, and the bright and adventurous do not instinctively know that there is an interesting career in broadcast because, for them, the internet represents that. The internet to them is what broadcasting was to young people for the second half of the twentieth century.

This gap was encapsulated by two user journeys presented by participants at the Summit. Peter Bruce took us through a journey that started with physics and a course at Ravensbourne College, UK, that took him through a career that spans Europe and Asia, working with the ‘Googles’ of the day - companies like Digital Vision, Ampex, Grass Valley, names that we associated with the established world of broadcast engineering. Josephine Tan grew up in Singapore loving TV and knowing that she wanted to be behind the camera. Although she took an Engineering qualification and worked to find her path into the industry, she was already growing up in the world where YouTube was as dominant a presence as national TV.

The 2017 Tom McGann Summit expanded on this theme. The Chair Dr Zaki highlighted this in his opening remarks on how emerging players in the OTT space were disrupters. These disrupters were not only changing the way that we access and view content but also showing how to be more efficient and lean in operations and process. Their ability to set up and launch operations is now well known, and they appear to require far fewer people in engineering and operations than traditional broadcasters. If the industry is already facing competition from other areas for talent, such as IT and internet technology companies, then established broadcasters and technology suppliers face more intense competition for a shrinking talent pool with these newer OTT players. This was the more urgent context of the Summit.
**Key Findings from the Summit**

The Summit utilised its diverse and experienced delegates to assess the core issues around skills, those attending were segmented into three mixed groups to identify the Asia-specific elements of skills shortages. Bearing in mind that Asia is a more diverse market than Europe, in terms of geography, cultural factors and levels of economic development there was a remarkable consistency in themes that emerged. The separation into groups allowed for subtly different themes to emerge, and we captured this through the following set of ‘Three Perspectives’.

**Perspective 1: People with Passion**

This perspective focused on a defining characteristic of the industry for the second half of the twentieth century - people with passion. As the industry matured and professionalised all its functions, including HR, we have adopted the norms of other industries, and whereas in the past we may have looked for people with initiative, now we fill roles based on defined job descriptions. However, our ability as an industry to take in a broader range of people and develop them through training is challenged due to a lack of training budgets. Training and development budgets have been hard hit in the past ten years as they have been a soft target for budget cuts. In part this may be due to the attitudes of some of the more established people in the industry - many of them would have been self-starters and learned on the job and so may question the need for formalised training. This is a misguided view, and as industries professionalise the need for structured formalised training increases, as the skills required to get something established are not the same skills as those required to keep an operation running efficiently. This is compounded by the heightened expectations of graduates coming into the market, many broadcasters reported a common trend of engineering graduates expecting a rapid promotion path within their early years of employment. This is understandable as the costs of degree level education are high, and there will be family expectations on salary and status. However, within the broadcast industry, a candidate achieving higher position and higher salary requires a high degree of knowledge and experience, and in the past, that may have been provided through ongoing training and development, but that is no longer the case for many broadcasters. This not only raises tensions but can lead to engineers exiting the industry for jobs that offer more personal development and potential.

There was an observation that in a recent recruitment drive in the region, there were over 40,000 applicants for 150 jobs. The process involved the use of stadia to put candidates through exams. However, there was a concern that this process did not guarantee to get the right quality of the final candidates, as by its very nature it could only focus on theoretical rather than practical capabilities. The sessions highlighted the difficulty of trying to identify which candidates are appropriate for a particular position within the Broadcast and Media operation. It was felt that various certification efforts had failed.
There is an increased acceptance that the industry will not return to the days of generous training budgets, as our industry will only become more competitive. As such we will always have budgetary constraints, and we will always have skills shortages, so the issue is how we use limited budgets in developing our people.

Attracting the right people in the first place is likely to be key to the answer. In our recruitment processes, we tend to split out candidates’ capabilities in their functional skills, their technical skills or their ‘soft skills’. We look to proven performance in studying or employment and focus on achievement of defined certifications or standards as we look to hire people based on indicators of capability. But these indicators are not necessarily good indicators at how adaptable or flexible a person is. A different way of looking at this would be to test for indications of how well a person will fit within a challenging environment, which would be

- **Attitude:** do they have the right attitude for dealing with the challenges of our industry? Do they have realistic expectations or do they walk in with a misplaced sense of entitlement?

- **Perspective:** can they intuit and apply insight in their course of their work with systems, processes and dealing with other people

- **Empowerment:** can they embrace empowerment when offered to them, and perhaps more critically are they capable of empowering others?

If as an industry, we can find ways of identifying talent with those three orientations then it will be easier to manage their functional, technical and soft-skills development. The industry requires continuous professional development as technology and regulation continually change, so the methods and even structures within broadcast organisations may need to change. Traditional job titles may no longer be suitable, and the need for multi-skilling will increase, not just for internal efficiencies but because that is happening with the other forms of media and OTT competitors.

Lastly, the composition of the workforce is also changing, there is more movement towards the use of contractors than before - although still not at the level of Europe - the survey indicates that 48% of respondents in Europe have at some point been self-employed, compared to just over 31% in APAC. This will of course further undermine broadcaster training as there will be a reluctance for broadcasters to invest in training contractors rather than permanent staff.

The people perspectives highlighted that we need to get the right people into the industry and quickly establish levels of trust. This will mean doing new things and changing the way we work, but it is now very clear that broadcasting is in a competitive market for talent.
Perspective 2: the need for Balance

This embeds some of the earlier themes but from the perspective of issues emerging from an ‘imbalance’ in expectations, in skills levels and outputs. One major imbalance that is becoming apparent is the dichotomy between ‘engineering’ and ‘operations’. In many broadcasters, the number of engineers has been cut as they are seen as a comparatively expensive resource which has increased the burden on operations. But at the same time, the reduction in engineering has highlighted that the role of operations was perhaps undervalued - even with fewer engineers the operations teams keep the channels on air. This imbalance is further stressed by the expectations of graduates who want to accelerate through management. One of the issues of engineering degrees is that they produce staff that come in strong on theoretical learning but may be limited practical technical skills. At the same time, operational staff tend to come in with good practical skills but very little theory as many will not have higher level degrees, at least not in engineering or technology. When there was budget both hurdles were easy to overcome as both types of people could be put through structured training or education. That is increasingly not the case. This can result in the continuation of poor practice and high turnover - if new staff are not seen as valuable, then it may be easier to just drop them, rather than invest. With cuts in training, this imbalance is getting worse. A related element was the career expectations within the industry. Whereas in the past many saw the broadcast industry as the place where they would spend their working career, now many saw it as just one potential career home amongst many. Indeed other industries such as Telecommunications were flagged as attractive options for industry professionals. It was also highlighted, that the management and executive level of broadcasters may no longer consist of people who have come up through the organisation gaining the deep understanding of the business that brings. This was a long-term concern for some.

A very different type of imbalance was in the perception of programme quality. A somewhat surprising but apparently consistent observation was that only about 20% of programme output was seen as ‘high quality’ by many attendees - a view that was common across a wide range of countries. This was not a reference to technical quality alone but the overall level of editorial and production quality. This would be seen as disastrous in other industries, and is a position will be challenged as more competition for viewers impacts the broadcast industry. Training is an important element here, and one of the means of improving that statistic.

The third area that affects all industries is the gender imbalance. The Survey found that only 12% of respondents in Europe were women, a figure fell to 8.6% in APAC. This was reflected in the gender composition of delegates to the Summit - we had three female attendees. There are cultural challenges in some areas, namely where there may be family pressure not to take higher profiles roles in Television, certainly not on-screen roles. There was an anecdote from a training organisation that had run a training course in an emerging market.
where 5 out of the 50 participants were female, though the best presenter was a woman. When asked about her career ambitions in front of the camera she replied that while she would love to be a presenter her family would never allow it - however, she hoped that a future daughter would have that opportunity.

The last area of imbalance was in our narrow definition of our industry (broadcasting) compared the broadening methods of accessing audio-visual content. How we access content go well beyond what some see as the conventional definition of ‘broadcasting’, so we need to rethink whether these terms are becoming obsolete or meaningful in a world of seemingly ubiquitous access to content.

**Perspective 3: Specific Learning Needs**

The third perspective was more of a ‘needs’ analysis of the industry which highlighted that our requirements are a mixture of technical and broader business skills. The technical changes facing the industry were paramount, and there is an urgent need to understand the whole of the digital workflow, from acquisition to ‘multi-outlet’ distribution. As we have moved from an analogue to digital workflow, we modified components in the chain, but the workflow remained substantially the same, and certainly the silos that we worked in have remained. This is being substantially challenged by changes in technology and consumer habits, and we will need to assess how new technologies change our organisations not just our technology estate. Four areas of technology change were identified as being particularly disruptive:

- **The use of IT and IP for video workflows**: IT has forced change throughout the broadcast technology landscape, and IP will go even further as it allows for completely different production and distribution models, as witnessed by the OTT providers. There is a need for deeper technical skills in these areas, and as such, this is one of the greatest skills-needs area

- **Cyber Security**: there is a growing awareness of the need for stronger Cyber Security skills throughout the production process; in preventing unauthorised sharing of produced content, preventing malicious attacks on broadcast systems and ensuring service and security of sensitive data is maintained. There is an acceptance that this goes well beyond simply ‘anti-virus’ software and the need to identify just how much protection is required at different stages of the workflow

- **Cloud**: The use of cloud compute, storage and distribution has been growing although this is an area where there may be huge differences in the accessibility of cloud infrastructure accessible from one country to the next. In countries with strong telecoms infrastructure, the use of cloud is now a serious option for consideration as part of an overall infrastructure strategy, and the skills required for this type of
infrastructure management are very different to those required to manage an on-premise broadcast technology machine room.

- **Media Management and Editing:** Non-linear editing and media management has transformed in the past ten years, but IT, IP and Cloud are driving further change in how we manage and edit content. This has raised the need for continuous training in media management and editing skills particularly has the demand for new form of content deliverables increases.

There was recognition that further technology change in digital marketing was going to generate both opportunities for revenue generation and additional training and skills needs. New technology such as object placing or more generally the need to provide more interactive engagement with audiences requires new ‘digital’ skills that are more the domain of web companies than broadcasters. This raises the need to think beyond just technical skills and that broadcasters need to bring in, or provide training to encourage more commercial thinking and uptake in their operations. That is, our skilled operations and engineering staff should not restrict their focus to filling technical gaps but should be able to, and encouraged to consider more creative ideas about new revenue models. Amazon Web Services is cited as a good example of a substantial business-to-business commercial model generated off the back of constructing the infrastructure for Amazon’s core retail website.

The last area of learning needed was in coordinate creative, technical and commercial in a more coherent way. These areas can be heavily siloed and in many cases, do not ‘speak the same language’. This cannot continue, not least because broadcasters will not be able to afford this model and it will prevent broadcasters getting new programme ideas and digital products to market, putting them at a competitive disadvantage. In the past, each silo has tended to focus on workflows in their area, but in the future, management will need to consider what will work best across an end-to-end digital workflow. This can only happen through deploying internal learning and co-operation training - through learning how to work in joint teams and investing in internal communications.

**Framework for Assessing Skills Shortage**

The Summit discussion brought out the fact that that there are different types of training and education and that we should not treat them in the same way. At a very high level, we can categorise four types of training on a scale of relative ‘intensity' that is, some indication of the level of intellectual and time commitment required. This is not meant to be a comprehensive model for all education but merely a tool to highlight where the training challenges may reside within broadcast. The four categories are:

- **‘Very light’**: this is supplementary education that might provide some update or insight on a specific topic. This could be information on a plugin found on a forum, a
white paper or a webinar. The delivery model is online or in-person, and the commercial model is self-funded in the sense that the cost is time.

- ‘Low’: this is entry point for more structured education which could be introductory course to new technology or a focused course providing an update on a specific application or area (e.g. a short course on a version upgrade of an editing application). The requirement for certification is low here, and it is more the case that the attendee would want to know that the content is of a sufficient quality i.e. they will look for certification of the content rather than the course.

- ‘Moderate’: is the mechanism for skilling up in greater depth in specific areas. This could range from a week’s course on a technology application up to a training programme comprising of courses in a discipline (e.g. Network Architecture) perhaps including on-the-job elements along with practical assessments, project work or report writing. These courses or programmes are typically certified although the body providing certification may be a vendor, an industry body or potentially a higher education institute. The role of certification is to provide an indication of both course content quality and candidate performance rather than part of a formal education.

- ‘Academic Degree’: the most formal form of education and for many engineers, it is often the entry point into broadcasting. The Summit discussion highlighted the very theoretical nature of many science and engineering degrees which is becoming problematic in an environment where staff need to be effective and valuable from the start.

**Summary of Key Issues**

We can deduce six key issues from these perspectives, for which our training needs must be able to address

1. **Getting the right people in** - but the problem is that our way of identifying the right people needs to change. A person with passion may be better than the person with an on-paper qualification.

2. **There is an imbalance in the market** because of general cost cutting and specifically, cuts in Training budgets. In the past, we could live with staff with theory but no practice or practice with no theory because training would cover it. The industry now brings in people with no skills but expects and needs them to be functional from day one. This imbalance conflicts with the needs of the industry - we live in a market where content is key to long-term value and competition, but we are not producing enough quality content, with enough of the right people.
3. **We have too strong a gender bias**, which goes down to the schooling level in biases on suitable qualifications and roles for women

4. **The technology in the market is changing so much**, so we are struggling to keep up with it - notably in areas such as IP/IT, using and managing Cloud, Cyber and general IT Security, customised software development. This is re-enforced by the relative lack of self-confidence in IT compared to Broadcast Technology, and in our Survey, more than 75% of APAC respondents graded themselves as 8 and above out of ten, compared to less than 20% of respondents who graded their skills in IT as 8 or above. Areas such as IP are critical as the competition is now emerging in that space, and Security is critical in protecting value of content in an IP world

5. **We need people who are thinking of making money as well as making content** i.e. monetising content through creative services that make use of skills we need to do our core job.

6. **We separate Creative, Technical and Commercial areas too much**, and we will need to find better collaboration and communication between these areas. We all need to be multi-lingual. We can no longer afford the best solution at any price. We need to think in terms of ‘appropriate’ - New Media has done this whereas in the past we may have gold-plated things.

These issues emphasise that the skills shortage is not about the ageing profile of broadcast engineers - it is much more about the transformation of the industry, and the need to rapidly adopt new skills and new ways of working. If we continue to think of training in an older model of just siloed technology skills, then we will fail to equip ourselves with the right tools to survive in a more competitive content world.
This model highlights the problematic area - the 'Low to Moderate' areas of training that are required to keep skills levels updated, and for operational staff may provide the essential base level of skills to be effective. The challenge is that the business model is beginning to break down. There are many educational providers who can operate in this space, but many report that they cannot make money, or that they cannot fill courses. Broadcasters are not putting money into training, which would finance these courses, and so the only option for staff is to self-fund these courses if they wish to take them. However, if broadcasters do not explicitly value these courses and reward staff for taking them, then candidates do not have any incentive to invest in these forms of education for themselves. This is the gap that potentially undermines our skills base in the industry.
Developing Solutions

Developing solutions to meet these transformation needs is not trivial. With the Geneva Summit, we were able to identify very specific issues that some members made ‘pledges' or commitments to carry out activities. That approach seemed less appropriate given we have identified broader issues, and our approach should first be to look at potential solutions and then look to how to build solution frameworks using the resources of the IABM, ABU and AIBD. We can structure these proposed solutions into three logical blocks as shown below:

- **Skills Survey**: to assess the needs and gaps in Skills Coverage
- An **Over-Arching Model** of skills: used to communicate with students, government bodies, industry associations, broadcasters and technology suppliers. Identifies the framework by which we can focus on skills
- **Industry Initiatives**: derived from the Over-Arching model this sets out the current industry initiatives to address skills gaps

![Diagram](chart)

1. **Skills Survey**

The IABM EF survey highlighted the historical lack of quality data on skills levels and provision in the industry. The fragmented nature of the industry, with many localised players, means that there is no single consistent global or even regional dataset provided by the market beyond individual country surveys. A critical component in addressing the skills issue is having a good understanding of the baseline level of skills and where the gaps are. Anecdotal evidence is useful, but it relies on periodic events, such as this Summit to be collated and assessed. There was clear support for the concept of a regular survey that would provide a good pan-regional and national assessment of skills levels, provision, trends and gaps in Asia. This would not be a large investment as shown by the IABM EF survey and would provide vital data for all industry participants.

**Recommendation 1**: IABM, ABU and AIBD scope the case for creating an annualised skills survey in the region, which can be reviewed in a session during the ABU-DBS annually.
2. Over-Arching Model of Skills Provision

There have been a variety of different approaches to address skills provision in the industry, but none stand out as being particularly successful. The IABM EF has found demand for certification to be lower than expected, a local training provider, DigiWorks, stated that they provided training more out of a sense of commitment to the industry rather than a commercial venture, and in fact rarely made money. There was an interesting approach developed in Australia around the concept of a Media Industry Technologist Certification (MITC) process that initially got significant backing from the government but faded quickly. The MITC approach on paper seems very strong - it utilised industry Subject Matter Experts (SMEs) to create a certification process that would be used by registered training organisations. The MITC certification would then provide an industry-based model for identifying skills levels in employees or candidates and guidance to candidates on where they would fit in the industry. Despite significant initial support from broadcasters and government during the setup, the initiative collapsed from a lack of committed funding and on-going broadcaster involvement. Broadcasters did not embrace the MITC process in a way that made it essential for candidates to go through the process, for example, the IT community used Cisco Certification process as a mandatory indicator of competence and capability in network switch technology.

- The industry needs to derive an over-arching model for how people can develop and learn within the industry. This model would set out:

  - How to attract school leavers and graduates into the industry, by identifying career options
  - Enable the provision of self-funded but low-cost entry-level skills training, offering low-risk means of self-certification within specific areas
  - Support the provision of more advanced vocational style training that would strengthen core operational skills
  - Identify means to maintain and enhance core operational and technology skills once employed
  - Derive a ‘Graduate Career Path’ arc that would guide graduates’ expectation on career progression
  - Provision of guidance for people exiting the industry and entering the industry from other sectors

The latter point may seem counter-intuitive, in that why would we would actively seek to support people wanting to exit the industry? The reason is that we need to acknowledge that traditional roles and job profiles will not survive in a world of digital disruption. School
leavers are likely to be less ‘sector-bound’ than current employees and are much more likely to envisage a career path that spans many sectors. This is particularly true in content related areas, and someone with strong content creation or management skills could find meaningful work with any firm that produces digital media, which could mean Retail, Corporate, Marketing, Sport, Government, Defence as much as Broadcasting. At the same time, the industry needs to be open and provide guidance on bringing in people from those other sectors. A broader base of skilled media operators and professionals is in the interest of the industry as it allows the industry to expand or contract with changes in the economy, technology and consumer habits.

It will be a moderately difficult task to construct this over-arching model, however, with the right set of expectations it is manageable. The ambition should not be to replicate the MITC approach, that is, it should not attempt to create a certification process, but it should set out the career options for entering the broadcast industry. This would have to involve broadcasters, industry associations and suppliers and training operators. This would then be reviewed annually during the ABU-DBS conference including the main stake holders (IABM, ABU, AIBD etc.. )

Recommendation 2: IABM, working with other qualified organisations globally such as the ABU and AIBD to define a programme to create an Industry Over-Arching Model for Careers in Broadcast and media technology

3. Industry Initiatives

3.1 Focus on Operational Training

Our historical focus has been on ‘engineering’ skills, and the role of engineering, whereas a more urgent area of focus, may be operations. Engineering and operations are closely coupled in a broadcast/media technology world, and the central role of IT and IT-based systems means that there is greater emphasis on technical operations staff to resolve issues than there was in the past - in part due to cuts in engineering.

In a world of SaaS, Cloud Services and the need for deeper IT support, the need for operations staff to fix issues is likely to rise rather than fall. Increasingly the core skill in operations is problem solving - in today’s world that might be delivering work-arounds in an existing workflow, but in the future that might be problem diagnosis and managing the operational relationship with IT suppliers. The people hired into Operations are different from individuals in Engineering, far fewer of them will have university degrees, and many may be school leavers. As such their education needs and their approach to learning will be different. Operations people will typically learn on the job and may receive far less training budget allocation except in specific technical roles (e.g. Playout). However, there is always the danger with on the job training of re-enforcing poor practice - workarounds that may have been effective five years ago may not be suitable today, but if they are ingrained in working practices then they will be difficult to change.
While we should not ignore the needs of Engineering, the industry, at least the end-user side should devote more focus to operational training. From an economic perspective, this may offer a better return, as operations staff are seen as less likely to leave the industry, certainly compared to engineers. This is precisely the area that concepts such as MITC would have worked well but if broadcasters do not appreciate the need to provide a career path and development structure for operations, then they will under-invest in this area.

Provision of training in this area needs to be different - it cannot be too costly as neither the individual nor broadcaster will fund it, but equally it does not require full formal qualifications at a University level. Given the nature of technology change, there is a need for continual training rather than every few years. In practical terms, this means that the cost of training would need to be very low (low 10s of dollars per person per year) or free to get any serious adoption. There are a number of ways in which this could be addressed:

- Offering guidance to broadcasters on setting up internal knowledge sharing platforms, using internal SMEs and Mentors for direction
- Creation of industry ‘curation’ portal that manages supplier and industry video content and documentation in a focused collection. There is a wealth of content on industry forums, YouTube, Vimeo and even Facebook but it requires individuals to research and discover the relevant content rather than being guided to it.
- Create informal industry seminars bringing supplier innovation to broadcasters on a regional basis

On the latter point many large suppliers already do this but for their products rather than participating in a broader event that is focused on workflow, not products. In Europe, there is an informal group initiative called the Workflow Innovation Group (WIG) that sets up ad hoc sessions to focus on file-based workflows - https://www.linkedin.com/groups/3053972. There is scope for extending this model with further support from organisations such as the IABM.

Recommendation 3: IABM EF should extend an existing commitment to an industry portal to include the curation of industry content

Recommendation 4: IABM should consider how to support ‘WIG’ style groups

3.2 Modular Training

The Summit emphasised that any training has to be in a modular form so that the costs can be managed and for people to construct a manageable long-term continuous education path. This does not just refer to industry provided training, and the concept of modular training components could be in a range of forms including:
• Specialist further and higher education institutions

• Professional modular courses from certified providers

• Industry ‘hackathons’ where industry participants get together and focus on addressing key challenges in an intense 2-3 day session. This is highly popular in all aspects of IT but was also something that happened at events such as NewsXchange in the past, and elements of which happen at newer events such as Mojocon

• In-house internship, as a means of getting younger students engaged in the industry

• Supplier Labs/R&D internship. Many suppliers and large broadcasters and vendors have significant R&D facilities, and these could be more actively promoted to schools to engage students. Some vendors, such as Sony Professional, already do this but the activity is not coordinated at an industry level

These are very many ideas about communication around what is currently available, and greater promotion of them would fit well within the scope of an industry portal.

3.3. Role of Higher Education

There was clear acknowledgement that there was a need for greater collaboration between the industry and educational institutions. There was a sense that broadcasters and suppliers would benefit from further access to innovation from institutions and that educational staff would benefit from a practical understanding of operations and engineering. It was widely understood that this a challenge, not least around the costs, though government-funding for this is available in some countries. Another angle that could be considered was co-operation around commercial ventures or specific products. There are some limited examples from Europe where some broadcasters focused university department had successfully co-operated with industry vendors. The scope for this could be larger given the need to access skills from e-commerce and internet-based businesses as increasingly they are the competitive threats to both broadcasters and suppliers. The most obvious examples of potential co-operation would be in social media and IP as these are two key disrupters to old-style broadcast. This is a broad and complex issue and not one that can be easily actioned. A starting point would be an industry forum that brought together education institutions, broadcasters and suppliers to assess co-operation, which could focus on two simple concepts:

• Trialling how to support continuous development in broadcast engineering and operations using local educational institutions

• Identify an R&D agenda and trial candidate for educational institutions and suppliers to co-operate on a product development project, with broadcasters providing oversight
This is a highly exploratory concept, and expectations should not be set too high - this is about starting co-operation on a simple but practical way with a view to assessing the scope for stronger and more formal co-operation.

Recommendation 5: IABM, ABU and AIBD set up an exploratory session to identify pilot trial areas for co-operation between industry and academic institutions
Conclusion

As with the first Tom McGann Summit in Geneva, our conclusions at the end of the Summit were not what we had expected going into it. The Geneva Summit highlighted that the issue was about attracting new talent into the industry rather than the concern of retiring skills engineers. However, the Kuala Lumpur Summit highlighted that the issue is not a general skills shortage but the fact that the industry is facing digital disruption and that the issue is more about how we manage and develop skills in a period of digital transformation. Dr Zaki summed up the Summit in a simple but compelling way when he stated that this digital disruption meant that our focus should not just be on increased competition but survival and that if we did not adapt, we would be displaced by leaner and more efficient players from the world of IT and IP.

Attracting the right talent and retaining that talent through skills development is a core part of the industry’s survival strategy. As practical steps in supporting the industry in its digital transformation we have derived five key recommendations that can be actioned:

Recommendation 1: IABM, ABU and AIBD scope the case for creating an annualised skills survey in the region, which can be reviewed in a session during the ABU-DBS annually.

Recommendation 2: IABM, working with other qualified organisations globally such as the ABU and AIBD to define a programme to create an Industry Over-Arching Model for Careers in Broadcast and media technology

Recommendation 3: IABM EF should extend an existing commitment to an industry portal to include the curation of industry content by IABM

Recommendation 4: IABM should consider how to support ‘WIG’ style groups

Recommendation 5: IABM, ABU and AIBD set up an exploratory session to identify pilot trial areas for co-operation between industry and academic institutions

We have taken care not to be over-ambitious with these recommendations, as it is more important to successfully deliver incremental change that has a real impact than to fail to deliver against a grandiose ‘change agenda’. These recommendations are pragmatic, and we have through the ABU and AIBD the industry forums in which to monitor, assess and ultimately expand the scope of work.
## Appendix 1: Summit Attendance

<table>
<thead>
<tr>
<th>Delegate</th>
<th>Title and Organisation</th>
<th>Organisation</th>
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<tbody>
<tr>
<td>Ahmad Zaki Mohd Salleh</td>
<td>Head of Engineering</td>
<td>TV3</td>
</tr>
<tr>
<td>Ahmed Nadeem</td>
<td>Head of Studio Technology &amp; Training</td>
<td>ABU</td>
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<tr>
<td>Amal Punchihewa</td>
<td>Director Technology</td>
<td>ABU</td>
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<tr>
<td>Andrew Jones</td>
<td>Head of Training</td>
<td>IABM</td>
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<tr>
<td>Andrew Yeo</td>
<td>Publisher/Editorial Director</td>
<td>Asia Pacific Broadcasting</td>
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<tr>
<td>Andy Chi Kin Cheung</td>
<td>Asst. Chief Engineer</td>
<td>Television Broadcasts Ltd</td>
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<tr>
<td>Andy Srinivasan</td>
<td>Director, APAC</td>
<td>IngressAsia Pte Ltd</td>
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<tr>
<td>Bala Murali Subramaney</td>
<td>General Manager</td>
<td>Astro</td>
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<tr>
<td>Fatimath Leeza</td>
<td>Program Manager</td>
<td>AIBD</td>
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<tr>
<td>Chris McMillan</td>
<td>Managing Director</td>
<td>Advance Television Academy</td>
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<tr>
<td>Dao Duy Hieu</td>
<td>Engineer</td>
<td>Vietnam Television (VTV)</td>
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<tr>
<td>Dato’ Haji Ab Rahim Abu Bakar</td>
<td>Director General</td>
<td>Radio Television Malaysia</td>
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<tr>
<td>David Lee</td>
<td>Consultant</td>
<td>Consultant</td>
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<tr>
<td>Dennis Breckenridge</td>
<td>Managing Director</td>
<td>Elevate Broadcast</td>
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<tr>
<td>Jeff Smart</td>
<td>COE</td>
<td>iSpire TV</td>
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<tr>
<td>Josephine Tan</td>
<td>Reporter</td>
<td>Asia Pacific Broadcasting</td>
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<tr>
<td>Ketan Shah</td>
<td>Director</td>
<td>AV8 Media</td>
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<tr>
<td>Kok Khuen Yoon</td>
<td>Director of Engineering</td>
<td>Grass Valley</td>
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<tr>
<td>Liming Fu</td>
<td>Managing Director - Chief Representative, Asia</td>
<td>Axon Digital Design, Asia</td>
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<tr>
<td>Masakazu Iwaki</td>
<td>Head of human Interface Research Division</td>
<td>NHK - Japan Broadcasting Corporation</td>
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<td>Nam Thanh Nguyen</td>
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<td>ABU</td>
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<tr>
<td>Nay Myo Win</td>
<td>Sr. Engineer</td>
<td>Myanmar Radio and Television</td>
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<tr>
<td>Nguyen Ngoc Manh</td>
<td>Engineer of Technical Division</td>
<td>The Voice of Vietnam (VOV)</td>
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<td>Niall Duffy</td>
<td>Chief Marketing Officer</td>
<td>Virtual AI</td>
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<td>Peter Bruce</td>
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<td>Soe Moe Kyw</td>
<td>Senior Engineer</td>
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<tr>
<td>Steve Ahern</td>
<td>CEO</td>
<td>AMT Australia</td>
</tr>
<tr>
<td>Thansarat Thanyathammaphan</td>
<td>Senior Engineer</td>
<td>Thai Public Broadcasting Service (TPBS)</td>
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### Monday Only

| Graham Stephens                  | Chief Technical Officer                     | Media City Malaysia       |
| Richard Jones                    | Strategic Account Manager, APAC             | Grass Valley              |
| Charles Sevior                   | CTO                                         | DELL EMC                  |
Appendix 2: Survey Results


The Score

IABM decided to undertake The Score to better understand demographics and professional development across the broadcast and media industry. The purpose of the survey was to gather data and insights on individuals’ experiences in the industry rather than on companies. We hope that the information we have gathered will aid understanding of the gender, learning and skills gaps in the broadcast and media industry – and provide a background against which improvements can be instigated.

We received 839 responses which were gathered through an online survey between the months of January and February 2017. The following is an analysis of the results.

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Demographics

The map below shows the worldwide coverage of the survey on the basis of respondents’ country of current workplace.

A look at the age distribution of respondents shows that most research participants (69%) are older than 40 while only a scant 11% is younger than 30. The rest (20%) are between 31 and 40. This distribution yields an average of 46 years of age. This shows that broadcast and media professionals are old compared to other verticals - research by PayScale shows that the median age in selected tech companies ranges from 27 to 39.

Most respondents identified themselves as male with only 12% saying they were female. This shows that the broadcast and media industry is still male-dominated. Research by PayScale shows that, on average, the gender divide in selected tech companies is less marked (73% vs 27%).
Below, we present a geographical split of the age data (by country). The darker the blue on the map, the higher the average age of respondents. The map illustrates that, generally, developing countries have a lower average age whereas developed countries have a higher average age.
Work in Broadcast & Media

Most respondents (93%) answered “Yes” to the question “Do you work in the broadcast and media industry?”. Of the respondents 7% who answered “No”, 47% are working in another sector, 35% are retired and 18% unemployed.

Looking at both respondents’ country of origin and country of current workplace shows that 22% of them are working in a country that is different from their country of origin. This highlights the international nature of the broadcast and media industry and the mobility of its workforce.

Most respondents (62%) said that they have worked in end-user organizations with 43% and 41% saying that they have worked for broadcast and media technology product vendors and service providers respectively. Only 15% said they have worked in other organizations such as trade bodies, trade magazines, educational institutes and other technology companies.

The question “What kind of broadcast and media organization do you work for at the moment?” produced similar results with 38% of respondents saying that they work for end-users, 30% saying that they work for product vendors and 23% saying that they work for service providers. Only 9% answered “Other Organization” to this question.
The classification of respondents on the basis of the product and service segments they have worked in is given below.

Below, we provide the top 10 job roles for respondents currently working at end-user organizations (38%) and supplier organizations (53%). The job role segmentation was produced by IABM.

As far as self-employment is concerned, most respondents (53%) said that they have never been self-employed. 23% have been self-employed but are not anymore while 24% are currently self-employed. If we look at the 24% that are currently self-employed, for 18% self-employment is the primary occupation while for 6% it is not. This shows that self-employment is relevant in the broadcast and media industry as for about a fifth of respondents this is the primary source of income.
Respondents were asked what level of education they had achieved when they started working in the broadcast and media sector. The challenge of this question was accounting for different education systems around the world. This was achieved through the 2011 International Standard Classification of Education (ISCED). We took into consideration levels 2-8 (from secondary to doctoral education) of this classification and merged levels 2 and 3 (lower and upper secondary education respectively) in one option (secondary education). The difference between post-secondary non-tertiary education and short-cycle tertiary education is explained below:

- **Post-secondary non-tertiary education** includes vocational learning generally aimed at preparing students for direct labor market entry. Examples of this include technician diploma and primary professional education.

- **Short-cycle tertiary education** can be considered as a cut-down version of higher tertiary education (e.g. bachelor, master) and is designed to provide students with professional knowledge, skills and competencies. As opposed to post-secondary non-tertiary education, short-cycle tertiary education programs provide a pathway to higher tertiary education programs. Examples of this include: (higher) technical education, community college education, technician or advanced/higher vocational training, associate degree, or bac+2.

For more information about this, please check the ISCED documentation.

Most respondents said that they held a bachelor’s degree (42%) or a master’s degree (19%) when they started working in the sector while 18% said that they held a secondary education certificate. 12% said that they held a short-cycle tertiary education degree with 8% saying they held a post-secondary non-tertiary education certificate. Only 1% said that they held a doctoral degree when they started working in broadcast and media.
Industry before Broadcast & Media

We asked respondents which industry they were working in before entering the broadcast and media sector. To produce a list of industries that was relevant to most respondents we took into consideration various classifications including the International Standard Industrial Classification (ISIC rev. 4) of all economic activities and the Industry Classification Benchmark (ICB).

The top four industries respondents worked in before broadcast & media are all technology-based sectors. These are: “Electronic & electrical equipment” (15%), “IT hardware & equipment” (9%), “Software & computer services” (9%) and “Mobile communications” (7%). The entire list of industries is presented below.
Industry Entry & Exit

We also asked respondents at what age they entered the broadcast and media sector. Plotting the distribution of entry age shows interesting results. In fact, an overwhelming majority of respondents (86%) entered the industry when they were 30 years old or below. 10% entered the industry when they were between 31 and 40 whereas 4% when they were older than 40.

Therefore, the professional development of broadcast and media professionals at an early age may be considered essential by employers in the sector. Employers may prefer young graduates over experienced professionals to be able to shape their mindsets with industry-specific knowledge. This conclusion is reinforced by the relatively “closed” nature of the broadcast and media industry. In fact, on average, over 70% of employers of respondents are in the broadcast and media sector. Also, of the 3% of respondents that left the industry for another sector, they mostly joined the education industry.

We also asked respondents how they found their first job in the industry:
Most respondents (28%) said that they found their first job in the broadcast and media industry through traditional networking practices (face-to-face, email, phone etc.). The other most common ways to find the first job were “Employee referral” and “Newspaper (local; national)”. It is interesting to note that new job search methods such as web portals and social media platforms were used only by a small minority of respondents (5%).

It is logical to correlate these results with the age distribution of respondents. In fact, as mentioned above, most research participants (69%) are older than 40 years old. For this group of respondents, social media networking was not an option – when they found a job, it did not exist – while web portals may have been available only to a small sub-set of them – web portals were invented about twenty years ago.

In the final section of the survey, we asked respondents some questions about their professional development from the first years of their career to today as well as their skills portfolio.

Looking at professional development in the first three years of their career shows that most respondents (59.5%) received training in those early years. Of those who received the training, 78% were trained by their employers whereas 22% by a third-party organization. The satisfaction with this training was generally high as 76.4% respondents rated it from 7 to 10 (on a scale from 1 to 10).

As far as ongoing professional development is concerned, most research participants (56.1%) rely on “Conference & presentations” and “Trade shows” to keep up to date with the latest developments in the industry. For 43.7% of respondents, the main barrier to their current professional development is “Lack of time.”
We also asked respondents to rate their broadcasting and IT skills on a scale from 1 to 10. The chart shows that most respondents rated highly both their broadcasting and IT skills. However, a higher percentage of respondents rated their broadcasting skills with 8, 9 or 10 (59% vs 23%). This may reflect the transition to IT the broadcast and media industry is undergoing at the moment and the relatively aged workforce – who was equipped mostly with broadcasting skills.

Anecdotal feedback shows that most respondents mentioned IT-related skills as the most needed at the moment. Some relevant respondents’ comments are reported below.

When asked what would be the best way to enhance their current skills portfolio, most respondents said that “On-the-job training/mentoring” (38.9%) and “Face-to-face training” (35.2%) would be their preferred methods.
It is worth noting that “Further education” and “Professional qualification” occupy the bottom of this list. Respondents may think that there is a disconnect between what is taught in academic or professional programs and the requirements of an ever-changing workplace. It is safe to say that some academic and professional institutions are struggling to keep up with the relentless pace of technological change. Therefore, most respondents seem to prefer to acquire skills related to their jobs.

It is surprising that face-to-face training is still vastly preferred over online training. The growth in online delivery of education is however continuing and this difference may shrink in the future.
About IABM

IABM is the international trade association for suppliers of broadcast and media technology. IABM facilitates the important networking and interaction between suppliers that shape and define the unique ecosystem of the broadcast and media technology industry.

IABM supports member companies with a comprehensive range of services across market intelligence, training, events, technology, exhibitions, business standards and best practices. We hold the interests of member companies as paramount, and strive to provide strong guidance and support at every level in all geographies.

We understand that in today’s rapidly changing media landscape, our members have never had a greater need for timely, relevant and effective advice and support. IABM’s mission is to be an ever more powerful beacon illuminating the way forward, highly responsive to all our members’ needs and helping them to successfully navigate change and prosper.

Further information about IABM and its activities can be found at www.theiabm.org.