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BETT 2018 Show Review

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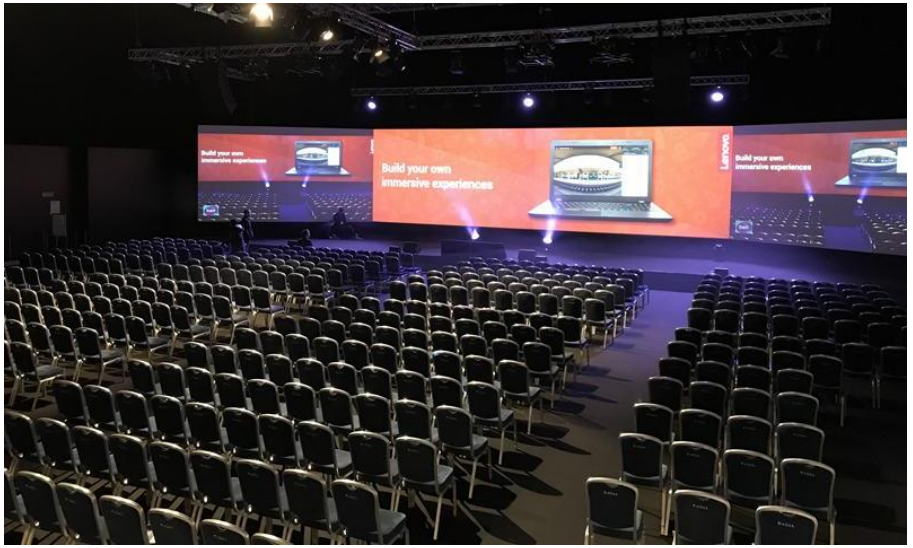
INTRODUCTION

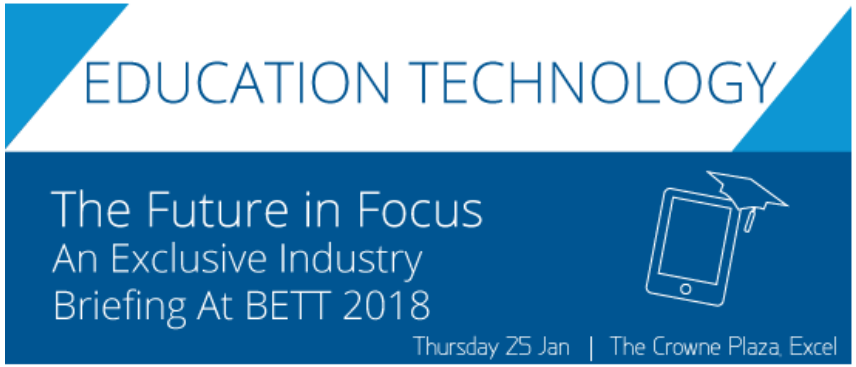
This report provides a snapshot of the leading product launches and "talking-points" for Futuresource clients. We are not aiming to cover every product and offerings from all the 850 stands and countless presentations.

- Futuresource fielded a team of eleven analysts on the ground to capture the highlights from Bett 2018.
- This was the sixth year at the ExCel and the team collected generally positive feedback about the venue and event.
  - The scale of the event is such that the ExCel is the only location big enough to host in London.
- There were over 850 exhibitors, more than ever before with over 34,700 visitors.
- Floor space was 41,000 sqm an increase of ¼ since 2014.
- Bett continues to be a truly global show with attendees from 131 countries and far more product launches than at ISTE or any other education show.
- The show was very busy, Day 1, seeming to attract a wide range of international visitors and many large country delegations. There was an overwhelming volume of teachers on Day 2 and Day 3. Each day was busy up until the end.
- The Arena, seating 700, attracted a good deal of attention with some high-profile speakers including: Bill Rankin, Lord Adonis, Baroness Beeban Kidron, Helen Skelton and Natasha Kaplinsky.



Bett Arena

FUTURESOURCE INDUSTRY BRIEFING



- For the fifth year Futuresource hosted a exclusive industry briefing at Bett focusing on education technology, over 170 people registered.
- The Futuresource team presented their assessment of current education market dynamics and explored the future opportunities, including:
  - 2017 – Key global trends
  - VR in the classroom
  - The impact of OER on content publishing
  - The rise of data analytics in schools

KEY HEADLINES AND THEMES (1)

- 2018 felt like an iteration of previous shows. Once again devices, infrastructure, security and back office SaaS solutions were the focus of the show with curriculum playing a secondary role.
  - Subtle improvements outweighed breakout diversity with talk of compliance and efficiency forming the backbone of many vendors propositions. Creativity and inventiveness were secondary points of influence but could be found beyond the confines of the STEAM and start up Villages. Virtual Reality saw a strong showing, with experiences present on close to a dozen booths, robotics was another core theme still riding the tradeshow hype curve and solutions enabling better classroom collaboration and personalised learning experiences remain key talking points.
- The influence of Microsoft and Google is increasing. With demand for student devices in K-12 education on the rise the competition between Microsoft and Google to provide the OS and productivity suites powering these devices is intensifying.
  - Both companies commanded impressive square footage on the show floor with each making a raft of announcements.
  - Microsoft announced the increased availability of low cost Windows devices alongside a host of upgrades and integrations for M365 for Education.
  - Google focused on security and data protection seeking to reassure customers of it's products compliance with new GDPR regulations. Enterprise features for G Suite for Education were also announced targeting large school districts and the higher education market by offering users greater control and functionality.
- Numerous new computing devices were announced by OEM partners targeting the education sector. The entry level of the market continues to be a key battle ground with sub $300 devices accounting for a growing share of sales in recent years.
  - Microsoft is seeking to increase it's stake in this sector announcing a range of low cost solutions through it's OEM partners at the show.
  - Google is heading in the other direction, working with it's partners to increase the average specification of ChromeBooks product by offering features like larger screen sizes, increased storage and touch screen functionality.
    - Futuresource had expected to see Google partners showing Chrome OS tablets targeting the K-3 market at Bett. No such product was formally announced but it has been widely reported that such a solution was shown.
  - Apple was not present on the show floor but was represented through key UK channel partners like XMA and Albion computers. Trying to compete in an increasingly price driven market Apple partners were emphasising the residual value Apple products retain throughout a four year lifespan and therefore reducing the overall cost of Apple product ownership for schools.

KEY HEADLINES AND THEMES (2)

- Virtual Reality & Robotics were widely shown but integration into curriculum and positive impacts on learning outcomes remain barriers to mainstream adoption
- Virtual Reality was a key theme on the show floor with a large number of demonstrations taking place. While the availability of education focused content continues to increase some demos on the show floor relied on consumer focused gaming content.
  - VR still has to prove it can move past the initial 'wow' factor that new technology brings to learning and develop deep integration with curriculum and specific learning outcomes in order to ensure longevity and mainstream adoption (outside of obvious niche education applications such as medical training colleges).
    - On it's booth, Microsoft highlighted the work it is doing with Pearson to bring curriculum aligned content for secondary maths and sciences for both its HoloLens and Mixed reality products.
  - Developments in the content space are focused around moving experiences from passive experiences found in some of the virtual tour content which has driven the majority of usage to date towards more creative scenarios requiring active engagement from students.
    - Google announced it's partnership with Lenovo to launch the Mirage Solo VR headset, and associated camera 180 degree camera, allowing students to develop their own immersive video experiences.
  - Longer term Futuresource believes adoption of VR/MR technology within education will achieve scale. In our latest report we forecast over 70M K-12 students globally will have a VR experience in the classroom in 2021. But most use cases will remain short form and largely passive experiences on low end hardware that is subsidised to schools as part of larger technology deployments. While the impact on learning outcomes for the most part will be limited there are opportunities for VR to deliver unique experiences in applications like simulation and language learning and a rising install base of VR capable devices which will offer publishers the opportunity to differentiate content.
- The use of robotics to teach computational thinking and coding languages remained a key theme on the show floor with over a dozen vendors showing solutions. The introduction of coding into the curriculum in the UK and a number of markets internationally has brought increased attention to the segment but the market remains relatively nascent and largely confined to extra curricular clubs rather than mainstream classrooms. Large deployments are rare preventing the education ICT reseller channel from becoming actively involved in the space. Futuresource's latest report on this segment forecasts the robotic coding tool market in education to grow only 13% in 2018 reaching a market value of $153M globally.

KEY HEADLINES AND THEMES (3)

- There was a big focus on data management on the show floor with the impending regulations brought in by GDPR a key discussion point. Many software suppliers including both Google and Microsoft were vocal about their compliance (as data processors) with the new rules, scheduled to come into effect in May 2018.
- Adaptive learning is a buzz word in educational software today with solutions allowing differentiated learning paths. The role of Machine Learning is developing, but it is important to distinguish between platforms that are using genuine Artificial Intelligence and those that use more basic logic based 'root and branch' based algorithms to differentiate instruction.
- With the main focus of the show being Administrative platforms rather than Publishing platforms there were not too many examples of Adaptive Learning Tools or Machine Learning on the show floor.
  - Most solutions on the show floor were focused more on the administrative side of analytics: Attendance, Grades, Behaviour rather than analytics specifically designed to drive learning.
  - Currently the market for standalone adaptive learning platforms is largely contained within the higher education and corporate learning markets but providers like Century Tech (focused on UK secondary schools) and French based provider Domoscio were at the show, seeking to gain tracking in K-12 environments
  - In the K-12 market, existing providers will need to gain more scale in order to obtain enough data to develop the learning algorithms.
- Interactive Displays were once again widely on display. As we saw last year ranges are becoming simpler, most vendors now have just one or two interactive ranges: entry and advanced, this is a change from the past when ranges kept growing.
- There is a trend towards more display personalisation. Very useful for a teacher moving between classrooms who can set up the display to a pre-set height, content and configurations via biometric fingerprint reader (i.e. Viewsonic) or NFC card control (i.e. Prowise)
- Latest IR products are offering better accuracy and is "good-enough" for K-12 education. Capacitive PCAP was demonstrated on a few stands but the applications were aimed at corporate users as the cost is typically still prohibitive for schools.
- Most vendors were demonstrating screen sharing with multiple devices, often as standard as wireless presentation solutions develop and schools look to integrate student devices into classroom AV solutions.

COMPUTING

COMPUTING

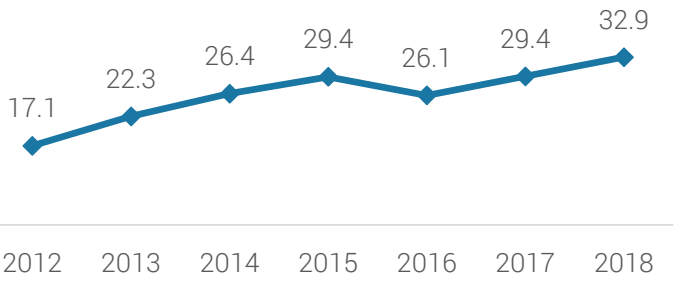
Major Announcements From Google/Microsoft and OEM partners. Wide Range of Education Tailored Price

- With Microsoft announcing a raft of products and updates across 2017 and at the BETT show, the fight for OS market share in the education market is expected to become increasingly competitive in 2018 and Microsoft seek to gain back share taken by Google in the US and Google seeks to expand adoption of the Chrome OS in new markets. With global sales of mobile computing devices into K-12 schools forecast to reach 33 million in 2018, the education sector is becoming increasingly important as 'OS' providers, compete for growth opportunities and the mindshare of the future workforce.
- Both companies (and their OEM partners) announced new dedicated education specific products and solutions.
  - Apple was not present at BETT. However, some companies were exhibiting iOS software solutions.
- Microsoft announced a range of vendor partnerships on new devices running Windows 10S. Low cost Windows 10S devices were launched by brands including ASUS, Lenovo, JP and Dell directly targeting the entry level market where Chromebooks have gained share in recent years.
- New Chromebooks were announced by Acer, ASUS, HP, Dell and Lenovo. A major focus was on 2in1 devices which have seen strong growth in several markets in the last year. With declining prices in the segment and improvements in complimentary pen technology increasing adoption is forecast.
- In the light of the recent changes to European data regulations, both companies made announcements reassuring customers their solutions are GDPR compliant.

Lenovo 500e Convertible Chromebook with a Stylus

ASUS Vivobook E201 Windows 10s Notebook

Mobile PC Sales into K-12 Education – Global in Millions *



Source – Futuresource Personal Computing in K-12 - Q3 2017

*Source – Futuresource Personal Computing in K-12 - Q3 2017

Lenovo Stand

ASUS Stand

PLATFORMS AND TOOLS

MANAGEMENT INFORMATION SYSTEMS (MIS)

Developments in Service Offerings to Target Multi Academy Trusts and Streamline Products

Capita stand

- The MIS (SIS) market in the UK is relatively static with close to 100% penetration and consolidation of local education authority contracts around one major provider, Capita Sims.
  - This year, Capita was focused on its new update, the transition to cloud based services. Capita announced SIMS Primary at the show, a cloud based solution.
    - Using the cloud saves money and time as data back ups and updates become automatic and data storage moves away from physical, onsite servers.
- Software supplier GO 4 School announced its new cloud based MIS (SIS). Having previously offered individual modules of pupil tracking, homework, seating plans etc. This new offering connects these individual software tools into a consolidated MIS (SIS) platform. The company also announced a new mobile app for parent-school communications.
- The movement towards Academies in the UK has brought with it a growing number of MIS (SIS) Providers as new Academies review software investments and explore alternative providers. With approximately 18% of primary schools and 36% secondary schools currently partnered in Multiple Academy Trusts (MAT's)*, this is a large market segment.
  - Providers such as Bromcom, Arbor and PupilAsset have been successful targeting the MAT market, offering solutions for data management and analysis that allow Trusts to manage multiple academies from a single platform
  - Capita SIMS SchoolView was created to service Multi Academy Trusts by providing a view of performance across multiple academies
- Software provider Furlong announced new features this year including better integration with third parties and an online payment process available from June.
- Other MIS (SIS) providers including Scholarpack, RM, and Schoolpod were all on the show floor.

* Source: Department for Education EduBase (May 2017) and 'Open academies and academy projects awaiting approval' (March 2017)

Free Solutions From Microsoft & Google are a Growing Threat to Paid for Providers

- The K-12 Learning Management Systems (LMS) market continues to see rising demand as a growing number of schools globally seek to manage assignment distribution, student/teacher interactions and blended learning via centralised management platforms. As demand has risen, so have the number of freemium and low cost platforms offered to the market.
- This trends has been driven by the rise of Google Classroom was clearly visible at the Bett show with a raft announcements from Microsoft regarding it Teams for Education product. Free for the100M worldwide users of Office 365 for Education, Teams for Education provides team chat functionality for collaboration, content storage for curriculum and teacher specific features for class management. With a growing range of features Free platforms like Google Classroom and Teams for Education have the potential to replace more complex paid for LMS's.
- At the show Microsoft announced a range of upgrades to Teams for Education including on demand translations and assignment analytics. Perhaps most importantly Microsoft announced new integrations with leading US K-12 Student Information System (SIS) provider PowerSchool. It will be interesting to see if this partnership has any impact on device and productivity suite choice in schools using PowerSchool products. Announced integrations include the ability to seamlessly transfer student grades from Teams to the SIS (MIS), saving teachers time by removing the requirement for grade entry in multiple systems.

- Reducing operational burdens and improving productivity was the key message from many LMS providers at the show.
  - Leading UK Private school provider Firefly focused on it's platforms ease of use and near universal adoption across the institutions in which it is present.
  - Frog launched it's £1 Million Challenge setting the objective of saving UK schools a combined million pounds by January 2019 through it's platform.
  - US Giant Instructure was also present. The Canvas LMS provider is approaching the fragmented UK market by highlighting the availability of free teacher accounts at the show.
  - Light LMS solutions Teacher Dashboard 365 and Showbie were also in attendance, highlighting the benefits of the paperless classroom through digital assignment distribution.

Firefly Usage Statistics

Merger of Schoolcomms and Leading Online Payments Provider Parent Pay

Combined Schoolcomms and ParentPay stand

Weduc stand

- The merger of leading UK communications provider Schoolcomms and leading online payments provider Parent Pay in the last year, could be seen with their intertwining stands at BETT.
  - With the streamlining of communication and administration for users through this merger and the growing partnerships with MIS (SIS) companies, including market leader Capita, data integration is becoming easier and school administration more efficient.
  - The main update this year from Schoolcomms is the school branding option available on the app from school colours, banner and logo.
- Other parent engagement companies remain present at BETT, including Weduc that launched last year. New features include message scheduling, a new portal area and easier absence reporting and register taking.
- Piota and my School App were some additional providers in this space exhibiting at the show.

STEAM

VIRTUAL AND MIXED REALITY

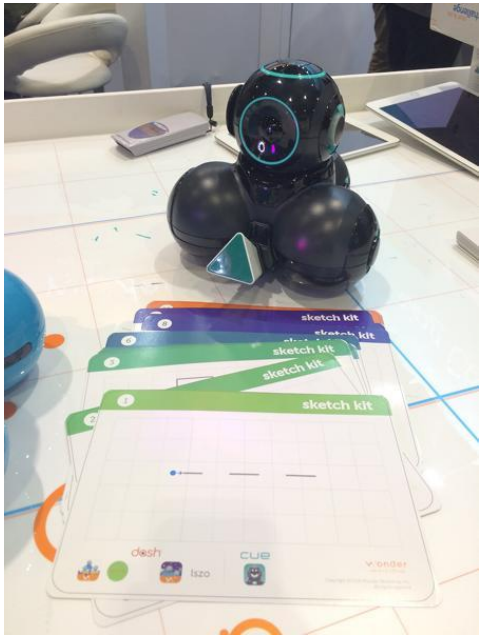
Virtual and Mixed Reality Was One of the Highlights with Numerous Demonstrations

- Once again virtual and mixed reality was one of the key talking points of the show with a large number of booths demonstrating headsets. A lot of demonstrations included integration of controllers, that brought new levels of interactivity to users.
  - The controllers were utilised to allow students to answer multi choice questions, browse the internet and play games.
  - The amount of tailored content still remains the biggest challenge in the space. Most of the demonstrations at the show included gaming rather than education specific content.
  - Microsoft announced a number of education specific experiences for it's Mixed Reality and HoloLens solutions developed in partnership with Pearson.
- Lenovo displayed its VR headset priced at £400 excluding VAT, which was launched earlier this year at CES. A 180 degree camera was introduced together with the VR device allowing students/teachers to create their own content.
  - HP, Acer, Dell & Asus were also running virtual and mixed reality demonstrations at their booths.

Focus on Curriculum Based Activities To Drive Use Case in Classrooms

- Robotics as a means to teach STEM and computer science was a major talking point at the show. As the market develops providers in the space are increasingly linking products to curriculum to promote learning outcomes but this practice remains in the early stages. There was a wide variety of companies from start ups to larger industry players who demonstrated how robotics could be used everyday in the classroom but the market remains relatively nascent and largely confined to extra curricular clubs rather than mainstream classrooms. Large deployments are rare preventing the mainstream education ICT reseller channel from becoming actively involved in the space and driving the segment forward. Futuresource's latest report on this segment forecasts the robotic coding tool market in education to grow only 13% in 2018 reaching a value of $153M globally.
- Providers at the show focused on highlighting use cases for robotics across curricula.
  - Wonder Workshop introduced its new Cue robots, aimed at 11+ years with customizable personalities. Wonder Workshop also launched a sketch kit, adding value to its products by adding arts to its STEM offering and making the robots more attractive to teens.
  - Sphero Edu focused on demonstrating different activities aimed at KS2 and 3 across STEAM subjects as well as history, geography and literacy.
- For younger years, the focus of robotic products was on using wholly or partially assembled devices to teach computational thinking and logic. More advanced providers are developing solutions for older years that additionally teach construction, electronics and computer science, through targeting extra curricular activities with activity plans.
  - With many companies focusing primarily on one age group, Engino Education took a different path and showed how each of its education sets could service a range of experience levels.
- The STEAM village section of the exhibition hall allowed attendees to learn and develop skills to take back to the classroom by 'learning through play'. Key exhibitors included Raspberry Pi and Micro:bit which both offer development boards to support coding.

Engino Education Stand



New Wonder Workshop Cue robot and Sketch Kit

GAMING & GAMIFICATION

Engaging Students By Incorporating Gaming Elements Was A Common Theme at The Show

- There were a number of gaming solutions at BETT 2018 that aim to engage students whilst also being educational. In past shows, gaming technologies have faced questions over the educational benefits these solutions offer. In the recent past, gaming technologies have been somewhat legitimised by two key factors, namely, the heavy promotion of Minecraft Education by Microsoft, and the growing trend towards teaching computational thinking and coding languages through games based software and robotics.
- Minecraft: Education Edition goes far in legitimising gaming as a tool to both engage children and drive measurable learning outcomes. Minecraft promotes both problem solving and creativity providing a sandbox environment for STEAM projects. This solution has a number of subject focused areas with BETT hosting the introduction of new Chemistry curriculum, where players gain access to in-game chemistry experiments simulating real world science and ecology experiments. Lessons include the building of a sustainable home to teach children about the environment.

Minecraft Education offers a large number of classes ranging from chemistry to history. This chemistry class (pictured right) shows an experiment to create super fertiliser.

The Kubo scans the symbol and teaches children how to correctly spell with its new Language Pack.

- Gamification was a popular theme of the show with vendors using competitive point scoring and game-like designs to make learning more engaging for students. Gamification is an additional trend helping to legitimise educational games to the wider industry. Good examples of this include Zapzapmath, a universe of space-themed maths games which aligns a video-game like system with an international math syllabi. Another good example of this is Darts Maths, a game-based learning programme promoting maths and analytical skills around a digital darts board.
- The use robots to teach computational thinking and logic to young children is another trend well illustrated on the show floor. Good examples of this include Bee-Bot from TTS which teaches young children control, directional language and programming. Other examples include the Kubo and the Primo, an innovative solution made of wood and using tactile (with Bluetooth) to guide young children's understanding of coding without the use of screens.

3D Printing Remains a Talking Point But is Less Evident Than in Previous Years

Skriware stand

'Bridging the 21st Century Skills Gap with 3D Printing in Classrooms' Seminar

- After significant interest a few years ago, 3D printing has not been well represented at recent BETT shows with the technology largely relegated to the back of design technology workshops. This year at BETT, there was a rising appreciation for how 3D printers could be used to benefit teaching of all lessons.
- To educate teachers and school leaders on the benefits of 3D printing, the seminar 'Bridging the 21st Century Skills Gap with 3D Printing in Classrooms' by Michael Miller from Dremel DigiLab brought into focus reasons for teachers to use and want a 3D printer. With example lesson plans and concepts such as printing trophies, the seminar brought to attention the ease and cost effectiveness of using 3D printing.
- Furthermore, some stands linked a 3D printer to educational resources and lesson plans, making the printers more accessible for all teachers.
  - The company Skriware showed software where students can create and prototype robots, lesson plans that engage with the curriculum and an app that can be used to program any robot. Cumulatively, this company offers skill building in design, engineering and programming, expanding the use cases of having a 3D printer.
  - As well as offering 3D scanners and printers, PrintLab bundled teacher training handbooks and lesson plans to support the use of 3D printing for teachers. It also showed the PrintLab Classroom portal where it posts additional resources and teachers can share ideas.
- In addition CEL announced its new RoboxPRO printer.

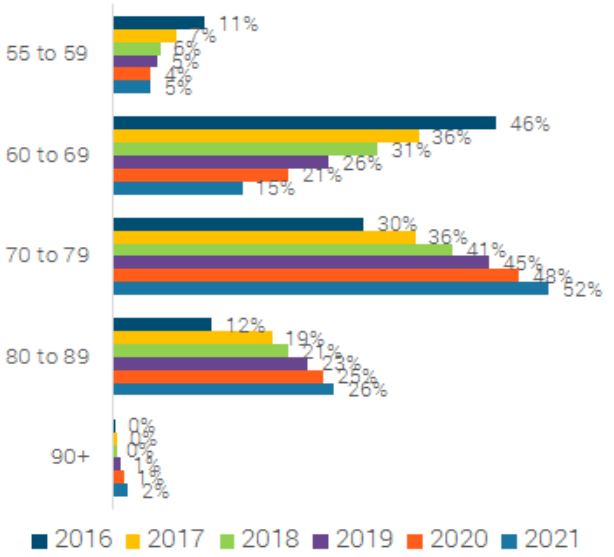
DISPLAYS

INTERACTIVE FLAT PANEL DISPLAYS WERE, AGAIN, EVERYWHERE

Persuasive Demonstrations, Larger Displays, Simpler Ranges and Personalised Settings

- Interactive flat panel displays continue to advance and although there were fewer major developments, the acceptance of the technology is now universal.
- As we saw last year ranges are becoming simpler, most vendors now have just one or two interactive ranges: entry and advanced, this is a change from the past when ranges kept growing.
- Most vendors were showing persuasive demonstrations that can be compulsive viewing. Fast and accurate handwriting recognition is now the norm, easy browser input, education apps, image capture, quick creation of new pages.
- There is a trend towards more display personalisation. Very useful for a teacher moving between classrooms who can set up the display to a pre-set height, content and configurations via biometric fingerprint reader (i.e. Viewsonic) or NFC card control (i.e. Prowise)
- Latest IR products are offering better accuracy and is "good-enough" for K-12 education. Capacitive PCAP was demonstrated on a few stands but the applications were aimed at corporate users as the cost is typically still prohibitive for schools.
- Most vendors were demonstrating screen sharing with multiple devices, often as standard.
- Displays are becoming more modular. As display sizes increase then the problems of replacing faulty parts can be significant so it is now common to have components, such as motherboards, that can be replaced in-situ.
- FlatFrog in-glass technology is used by, at least, five brands. Two years ago just Avocor displayed the technology, now Dell, Viewsonic, NEC and HiteVision all have the technology in high end ranges.
- Screen sizes are increasing, 70+" screens are taking over from 60" – see chart.
- 86" displays are replacing 84" as panel manufacturers are moving to new lines with more efficient processes meaning less wastage and more yield when the product is cut down. Also, bezels are becoming narrower, so the actual visible screen real estate is bigger.
- 4k and multi touch is now standard with most offering, at least, ten touch. Panel providers are rapidly transitioning large screen sizes (60"+) to 4k from 1080p.
- IFPD prices continue to drop. Prowise was, again, the lowest IFPD cost with Prowise Entry level 55" at £1,250 and Proline+ 75 at £2,750.

Worldwide IFPD Screen Size Splits
Education - volumes



Source – Futuresource QUARTER 3 2017 WORLD INTERACTIVE DISPLAYS

Interactive Floor Projection, Laser Phosphor and High-Brightness All on Show

- Similarly to last year, there was a substantial amount of floor projection exhibited at the show. A number of projector brand and education resellers demonstrated this technology; often using a short throw solution in conjunction with an interactive curtain or imaging camera.
- After winning "Best of Bett 2017", Sensory Guru's presence increased this year. Following this success, BETT 2018 saw many more examples of floor projection. Projector brands such as i3 Learning and Vivitek demonstrated capability, whilst other full-solution companies such as WizeFloor, SENse Micro and Active Floor, all offered competition.
- Targeted mostly at nursery, primary, and special educational needs institutions, floor projection offers a low cost and engaging experience which other display technologies cannot replicate. Case-studies have also been noted for use in waiting rooms (i.e. in hospitals and airports).

Sensory Guru Stand

Vivitek Projector

- Laser was again a key theme of the show for projection, with far more brands showing ultra short throw models this year. Although most were not brand new (many were debuted at InfoComm 2017), solutions by brands such as Vivitek and Epson demonstrated the impressive image quality of laser technology.
- Vivitek displayed an enormous 150" projection from its latest laser UST solution (DH765Z-UST), advertising its capability to supply the education signage market as well as front of class displays. Vivitek also promoted its Qumi portable range, reportedly targeting the primary and pre-school environments. Although often not being seen as bright enough for mainstream applications, such portable projectors find some opportunity in small group active learning environments.
- As well as displaying its new laser UST solution, Epson demonstrated a projector targeted at the 5-6k lumen commoditisation segment (EB-2265U). This solution was used in conjunction with a high contrast screen from DNP and highlighted Epson's new partnership with Kramer, featuring a VIA GO wireless presentation device.
- Many other brands demonstrated impressive solutions at the show. I3 learning demonstrated an ultra-wide interactive solution. Boxlight Mimio spoke of a new release called Mimio Space. This was reportedly also targeting an ultra-wide image applications, where projection holds competitive advantages over flat panel technology.
- Another of projection's strengths evident at the show was the servicing of 100"+ screen applications. This has been a prominent theme in the industry as of late, and has only been made more significant by recent decreases in the price of entry-level installation solutions. These brighter products offer much resilience for projection, especially in higher education. Sony, with its VPL-PHZ10 was one of the key brands to demonstrate products in this category. The vendor showcased large screen projection at the heart of a multi display set up which allows lecturers to share multiple content streams simultaneously.

COLLABORATIVE SOFTWARE & CREATIVE TOOLS

Desire To Create An Integrated Classroom Helping Drive Demand for Collaborative Products

- Interactive displays have been ubiquitous in education for a number of years now with the market for these devices mature in a number of territories – including the UK. With the increasing penetration of personal devices in the classroom we are now seeing much greater demand for a more integrated classroom experience with collaboration at the heart of this. The integration of personal devices into presentation solutions was a was a key theme discussed at BETT with the ability for all devices in the classroom (including interactive displays and personal devices) to operate in shared work spaced illustrated on many display vendors stands.
- Popular collaborative features at the show included content sharing, whiteboarding, question sets, voting and allowing a teacher to view, analyse and guide students during a lesson. In addition to display vendors focusing on this area, there were a number of collaboration and control vendors present including the likes of Crestron, Actiontec and Airserver.

The HP Shareboard digitises a standard whiteboard and live streams the feed to a device

SMART showcasing collaboration features with the help of students and teachers

- BETT hosted the launch of Microsoft's new Whiteboard app, included in free to access messaging and collaboration platform Microsoft Teams for Education. The whiteboarding platform allows users to work across multiple devices on a digital canvas simultaneously. This software allows interactive devices and displays operating windows 10 to access a freeform whiteboard canvas where users can draw and share notes, images and diagrams.
- HP launched the Shareboard at Bett. The Shareboard is a collaboration technology enabling the digitisation and live streaming of content drawn on a standard whiteboard. The solution includes a timeline view allowing students to watch a step-by-step guide to the development of content on a whiteboard. The Shareboard is a reskinned version of the Kaptivo product from Light Blue Optics which was also demonstrating at the show.
- With a high number of collaborative solutions supporting a range of teaching styles, simplicity and ease of use of products is an important factor for teachers with the possibility to be overwhelmed by functionalities a real concern. Despite this, the USP of creating a fully integrated classroom which promotes cooperation between pupils and gives teachers greater access to the workings of students is clearly a key driver for this market.

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KEY EXHIBITORS

Microsoft - A Huge Presence At BETT Complimented a Raft of Announcements

- Microsoft's presence at Bett covered a wide range of focus areas
  - A heavy focus was placed on the launch of a number of low cost Windows devices to compete with entry level Chromebook offerings.
  - Maker Market Demonstration in the STEAM village
  - Office 365, Microsoft Classroom and School Data Sync.
  - Partner Zone – Highlighting 3rd party solutions integrated with Microsoft solutions
  - Minecraft for Education
  - Hacking STEM
- A number of M365 for Education updates were announced.
  - OneNote Class Notebook, will now include assignment and grade integration with the most widely used SIS in the UK (SIMS Capita) and the U.S. (PowerSchool).
  - Microsoft Teams- a digital hub for the classroom will become accessible on iOS and Android . It helps teachers and students keep track of their assignments and classroom conversations on their phones or tablets, offering similar functionality to Google classroom.
  - Microsoft Learning Tools will be updated in February, adding dictation to the Office. This will help students of all abilities to write easily by using their voice. Immersive Reader functionality will later expand to Word for Mac, iPhone, Outlook Desktop, OneNote iPad, and OneNote Mac with support for many new languages.
  - PowerPoint will now allow teachers to record their lessons including slides, interactive ink and video to be able to later publish it to their Stream channel in Teams classrooms. This way, students can view their classroom content from anywhere in advance.

Minecraft in Education at the Microsoft Stand

MICROSOFT (2)

- Other announcement in teaching STEM subjects:
  - MakeCode announced a new Cue Education app, available first on Windows.
  - Coming this spring, a Chemistry update will enable teachers to use Minecraft: Education Edition and game-based learning to engage students in chemistry. Students can experiment building compounds and investigate topics like the stability of isotopes.
  - Windows Mixed Reality immersive VR headsets will be released starting at $299.
- To support that effort, Microsoft has announced three program updates:
  - Pearson will begin rolling out curriculum that will work on both HoloLens and Windows Mixed Reality immersive VR headsets starting in March 2018. Six new applications will be available.
  - Microsoft is partnering with PBS and NASA to expand its mixed reality curriculum offerings with the popular "Bringing the Universe to America's Classrooms" series.
  - Microsoft is making available a limited-time academic pricing offer for HoloLens.
  - Other partnerships include one with LEGO Education, offering a new free online Hacking STEM lesson plan that has students use the Pythagorean Theorem to explore and measure topography in 2D/3D space. Starting this March, Microsoft also will be partnering with BBC Earth to bring 'Oceans: Our Blue Planet' to classrooms and museums around the world

Microsoft Stand

Microsoft Stand

Google Announces New Chromebooks. Focuses on Security and Chromebook Use Cases

- Google continued to have a significant presence at Bett, demonstrating its range of education solutions.
- This year there were announcements of new Chromebooks coming from Acer, ASUS, HP, Dell and Lenovo, with changes and updates to core specifications. These devices are due to launch later in the year. A major focus was on 2in1 devices that have seen strong growth in several markets in the last year.
- This year at the Google stand, there was an emphasis on demonstrating the use of Chromebooks in the classroom:
  - There were regular Classroom and G suite for Education demonstrations that engaged attendees in classroom style presentations
  - Examples of how to use Chromebooks to teach science
  - Experiences of creative apps for education
  - Demonstrations of Google Expeditions VR experiences and the beta program to record virtual experiences with a 360 degree camera and the Google app.
- With a general attention on web and data safety at the show, Google ensured that there were no doubts of its position:
  - Demonstrated their compliance to GDPR as a Data Processor.
  - Launched the 'Be Internet Legends' campaign, the UK equivalent of Americas 'Be Internet Awesome'. This free initiative for UK schools aims to educate students about web safety.
  - Launched an enterprise edition of G Suite, a premium version with enhanced security, controls and customisation.
- Additionally, Google, along with Neverware, offered Cloud Ready transformations of old PC and Mac devices at its stand which could be picked up at the end of the day, enabling schools to get additional use out of old devices and exposing windows and mac users to the Chrome OS free of charge.

Google Stand

Google Stand


Google Stand

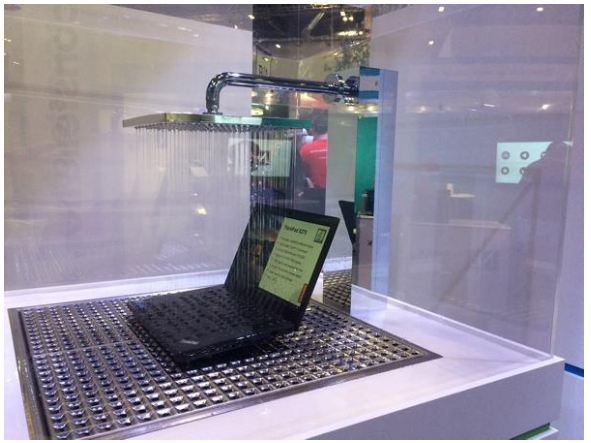
14%
'YoY' Chromebook growth in K-12 globally
* Futuresource forecast for CY2017 from Q3 report

9M+
Chromebooks in K-12 globally
* Futuresource forecast for CY2017 from Q3 report

31%
Of Total Shipments in K-12 globally
* Futuresource forecast for CY2017 from Q3 report

Lenovo Shows New Line-up of Windows and Chrome Devices

Lenovo Stand



Extreme Environments example

Theme this year

- As the registration partner for BETT 2018, Lenovo had a significant presence in the exhibition hall with an area dedicated to showing the extreme environments that its devices can withstand, and a nature-themed meeting space in the centre of the stand.
- Lenovo launched a new collection of education devices a few days prior to BETT and showed them on the stand after a rush to get them to the event in time. All devices are 11.6", starting from $189. The range includes:
  - Lenovo 100e (Windows and Chrome) Clamshell
  - Lenovo 300e (Windows and Chrome) Convertible 2in1
  - Lenovo 500e (Chrome) Convertible 2in1 with pen in a built-in compartment
- As well as new PC devices, Lenovo showed its new VR headset, the Mirage Solo, and associated camera.
  - Using the camera, 180 degree video could be recorded and seen through the VR device.

Lenovo Mirage Solo VR Headset

DELL AND ACER

Both Announcing New Education Computing Range

- The Dell stand showed a variety of hardware solutions that focused on collaborative spaces, encouraging group work and discussion.
  - Dell presented its existing range of Education devices:
    - Latitude 11 Convertible (Windows) or Chromebook 11 Convertible 2 in 1
    - Latitude 11 (Windows) and Chromebook 11
    - Latitude 13 (Windows) and Chromebook 13
  - And launched a new range of mid level education devices, the Chromebook 5000 series, which starts at $289. The first model in the range is the Chromebook 5190, a convertible 2in1 with pen support that is also available in clamshell form. This is expected to reach market at the end of Qtr. 1 2018.
- At the show Acer launched two Chromebook models: Chromebook Spin 11 and Chromebook 11 C732.
  - The new convertible Acer Chromebook Spin 11 (CP311-1H/CP311-1HN) features all-day battery life and two USB 3.1 Type C ports for charging and connectivity to external displays. Several models will be available in North America in March with prices starting at US$349, and in EMEA in April with prices starting at €379.
  - The new Acer Chromebook 11 C732 available with touch display builds on the rugged design of predecessors with an IP41 rating for protection against object and water intrusion and will include models with 4G LTE for connectivity and on-the-go access to data. It will be available to education customers in North America from March with prices starting at US$299.99 for touch models and US$279.99 for non-touch models, and in EMEA from April with prices starting at €329.
- Futuresource had expected to see a Chrome OS tablet at the Bett show. While no such products were formally announced It has been widely reported in the media that Acer's upcoming Chrome tablet was demonstrated for a short period.

Dell Stand

Acer Stand

HP, ASUS AND JP

New Windows 10S Devices From JP SaCouto and Chromebooks From HP

JP.ik Classmate Leap T303 with Microlens and thermal probe

ASUS stand

HP Booth

HP Chromebook 11 G6

- Earlier this year at CES HP announced two new Chromebooks that are targeted to the education and enterprise markets: The Chromebook 11 G6 and 14 G5, which were also presented at BETT.
  - Both devices feature USB-C ports for faster charging and connectivity.
  - Both units jump to 7th generation Intel Celeron N processors.
  - Storage is up to 64GB and there are slightly improved Intel HD Graphics 500.
- ASUS was showing its educational computing line-up and giving demos of its mixed reality headset. No new announcements this year.
- JP Sa Couto was also present at BETT showcasing its newly announced JP Classmate Leap T303 and Trigono V401. The vendor is well established in the Latin American market and growing presence in the Middle East and Africa region.
  - The Trigono is a convertible device with a stylus option aimed at teachers.
  - The Classmate Leap is a 180 degree, semi rugged clamshell aimed at students, with preloaded STEAM content that enhances the Microlens and thermal probe that come with the device.
  - Interestingly, both these new devices, as well as the pre-existing Turn device, are available with Windows 10S options.

New ActivPanel 65” with InGlass technology and the i-Series 75” using IR technology

- Promethean were showing the ActivPanel with InGlass touch and writing technology with an improved lag-free writing experience.
- ActivPanel is available in four models: 65” 4K, 70” HD, 75” 4K and 86” 4K. Addition of 65” 4K with InGlass technology.
- ActivPanel i-Series is available in two models: 65” HD and 75“ 4K. Addition of 75” 4K with IR technology. Android module can be optionally added.
- All models come with an Android module and provide tablet-like interface with teaching tools such as the instant whiteboard, screen sharing and access to thousands of educational apps via built-in app store.
  - Updates were announced for improved security, whiteboard tool and mirroring
- Both ActivInspire software, which Promethean will continue to support, as well as ClassFlow Desktop software were shown on the stand.
  - With ClassFlow, teachers can: deliver interactive multimedia lessons and have access to advanced classroom collaboration tools, such as instant polling and quizzes.
- Parent engagement can be promoted with the free ClassFlow Moments app, digital badges can be sent to students and parents and there are thousands of resources in the ClassFlow Marketplace.

New ActivPanel

Introduction of Online Software and SMART Board MX Entry Level Series

- SMART introduced SMART Learning Suite Online, a cloud-based software solution that enables teachers to access and deliver lessons online. It also offers the ability to create assessments, make game-based activities and send interactive SMART Notebook lessons to student devices.
- SMART launched the MX Series, as a new entry level series, the nearest comparable previous range would have been the 4000 series, discontinued last year, but the MX is a superior product as it includes SMART IQ technology which connects learning software, lesson content and student devices. This range will be important for SMART as a price-fighter for tenders and competitive bids.
- Available in 65", 75" and 86" 4K Ultra HD. The first customer shipments are anticipated to be in time for the summer buying season.
- SMART Podium 624 – 24" capacitive touchscreen, therefore no bezel, with 10 point touch and palm rejection. The Podium range has always been popular as a lectern for higher education lecture theatres.

New MX Series

- SMART Document Camera 550 - Wireless (WiFi) and cordless functionality provides the freedom for educators and students to engage from anywhere in the classroom.
- With one-touch integration with SMART Notebook software via an icon in the Notebook toolbar.

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COMPLEMENTARY HARDWARE PRODUCTS

COMPLEMENTARY HARDWARE PRODUCTS

Visualiser Specialist Companies with Smaller Stands, Carts Still Offer High Margins

- Elmo – Wide range of visualisers, TX-1, and new PX-30 launching mid-summer.
  - Huddle space collaboration hub to connect up to 8 devices via HDMI starting at €500.

- Lumens – Smaller stand than previous years.
  - DC125 Flyer, DC193 and PS752 ranges.
  - PTZ (Pan/Tilt/Zoom) camera Full HD 1080p video conference camera used for lecture capture.

- Hue – A regular at the show with a range of low-cost visualisers

- Again many charging carts. Although not seen as exciting high technology products the unanimous opinion is that carts are indispensable, a valuable part of the market and a high margin opportunity for resellers.

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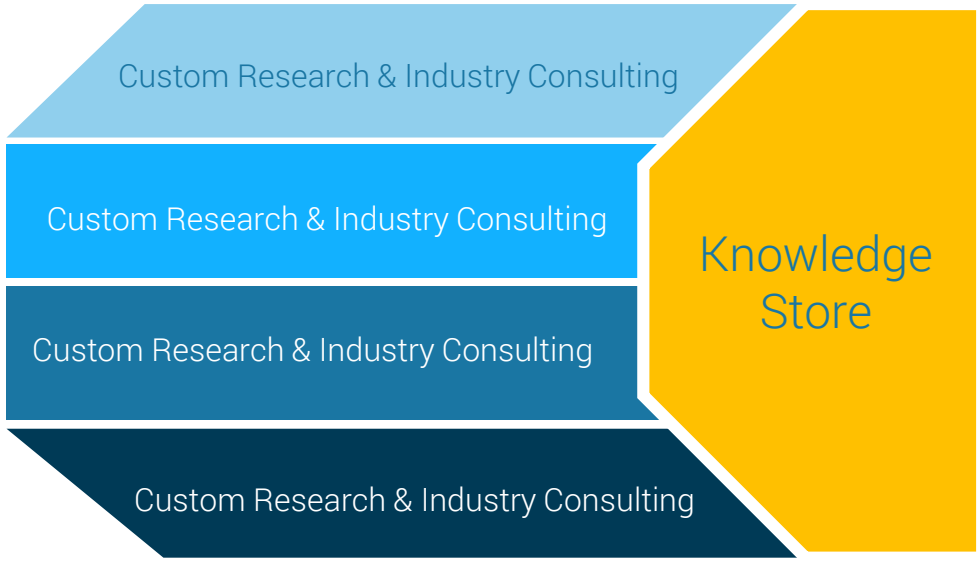
APPENDICES

FUTURESOURCE SERVICE OFFERINGS



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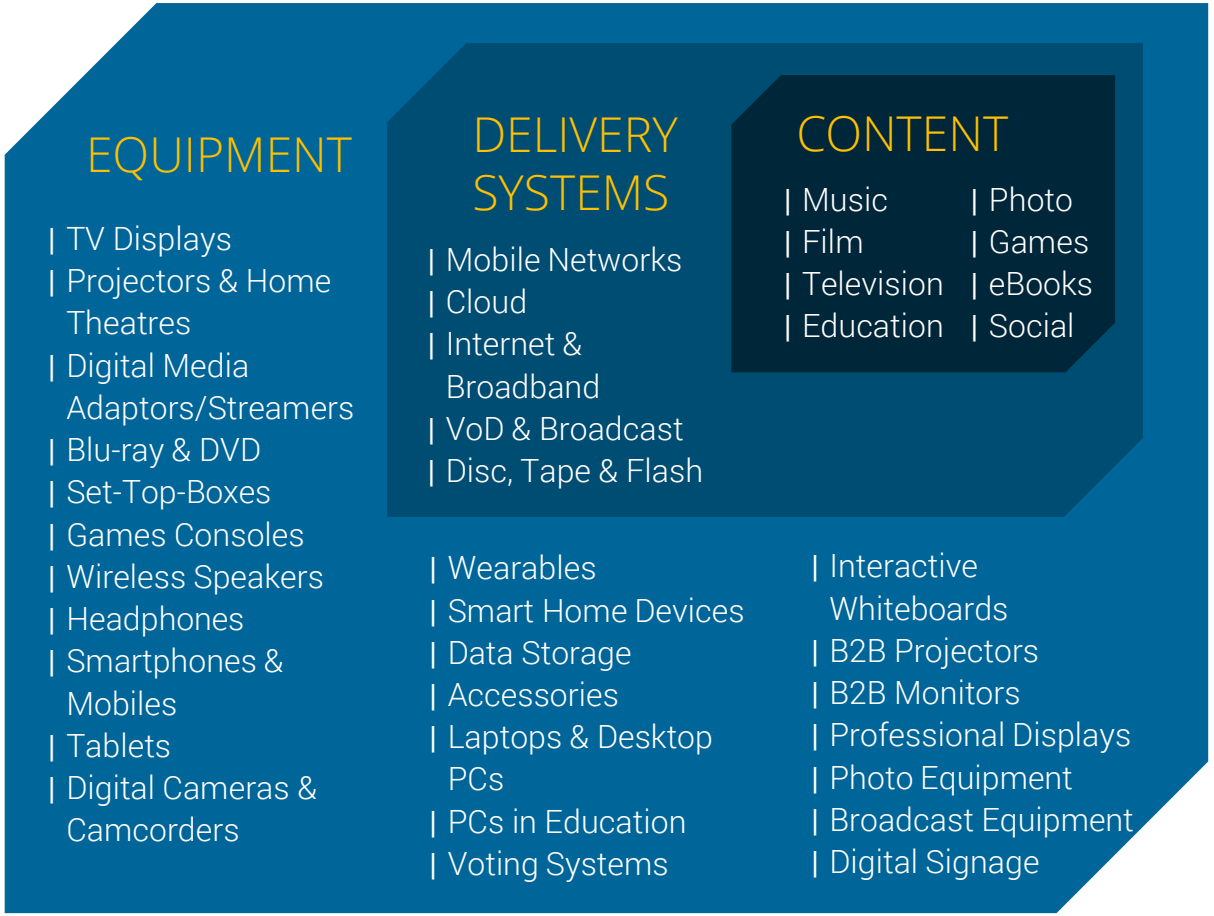
Annual subscriptions for product track – market sizing, forecasting, trends; internet-based price track by SKU, spec, country; channel track panels and syndicated end-user track panels

Customised platforms that centralise data, stock, sales promotion tracking and channel margins

Purchase individual reports, market data, technology rundowns and country profiles when you need them, with no ongoing contractual requirements

FUTURESOURCE AREAS OF EXPERTISE



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About Futuresource

Futuresource Consulting is a specialist research and knowledge-based consulting company with a heritage stretching back to the 1980s.

Its insight and global market coverage are based on informed regional expertise, ensuring its portfolio of world-class clients is fully supported in research, analysis, strategic planning and decision making.

- Consumer Electronics
- Print & Imaging
- Media & Entertainment
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- Optical Disc Manufacturing
- Broadcast Equipment
- Professional Displays

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