LTE **Mobile** 4G
Cloud technology
Staff attraction
Security **Skills shortages**
UX **Software** eCommerce Data management
Hardware ERP **BYOD** **Big data**
Long Term Evolution **User Experience**
IT **CRM** Cross-domain skills Data storage **Analytics**
HTML5 **Business Analysis** M2M **Machine 2 Machine**
MDM **Privacy** 4G **Personalisation**
Brain-drain Staff retention Open source code **Security Architects**
Personal devices **IT** Open source code
Web based services **Business Intelligence**

Technology Market Outlook Report
2014

ARM
TECHNOLOGY

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INFORMATION SECURITY
& COMMUNICATIONS

Contents

"employees expect **more quality** and **flexibility** from their **technology** at work."

📊 Executive summary

Welcome to ARM's inaugural Technology Market Outlook report. Our data has been collected through interviews with a panel of CIOs, IT Directors and consultants, to offer a qualitative view on the current market and their predictions for 2014.

According to Forrester Research[1], after a flat 2013, the UK's IT sector is forecast a promising 2014 and our findings support this view. Our respondents expect modest increases in 2014, with increased budgets for specific IT initiatives. Whilst (according to Forrester Research) the UK still lags behind Germany in the adoption of mobile and cloud technology, the same report found that UK companies spend proportionally more of their IT budgets on software and hardware than their German counterparts. By industry, the most advanced UK sector for cloud, mobile and analytics adoption is utilities. The retail sector is a big adopter of analytics and professional service firms are keen adopters of mobile technologies.

The greatest challenges currently facing our panel are those involving data management and security, cloud services, bring your own device (BYOD), and mobile technologies. Mobile is changing the way people behave and the user experience people expect from eCommerce brands is transferring to the workplace, with employees expecting more quality and flexibility from their technology at work. The majority of SME and enterprise businesses are facing the challenges of BYOD, where their networks need to address the issue of corporate data held on personal devices; not to mention the risks to privacy and implications of an always-on culture on employees' wellbeing (and work-life balance).

Our panel is excited not only by the opportunities offered by mobile and the cloud, but also by data storage, open source code databases, predictive analytics and 4G. These technologies not only have the power to boost revenue but also to transform the way businesses interact with their customers, clients, service providers, and staff.

But it's not only future proofing that's going to be tough: issues with staff retention and attraction are widespread and set to continue as skills shortages prevail in the industry and demand for cross-domain skills increases.

When staff with the most desirable IT skills sell their services to the highest bidder – and who can blame market forces – you may wonder when this brain-drain will begin to impact the UK's ability to innovate.

We hope that you find our report useful and welcome your comments for future Technology Market outlook reports – contact **bd@arm.co.uk** with your suggestions.

Les Duncan
MD, Advanced Resource Managers

[1.] Continued Gloom for European ICT Markets – A BT Futures Report, Forrester Research, July 2013.

◉ Expert Opinion: Current Climate

Which technology has impacted your business the most over the past year?

"Master data management (MDM) is currently having the biggest impact on our business. Business Analysis and IT/business strategic alignment is our current greatest challenge and we need highly skilled Business Analysts to close this gap. As we are a BI team, it is important that incoming staff members have operated in that environment previously and have a good understanding of the field."

Philip Bingham Manager, Corporate MIS, Allianz

"Our business has been impacted most by Bring Your Own Device (BYOD) and the Microsoft Windows 7 upgrade; we had 20,000 applications that needed to be tested on the new platform before deployment."

Group CIO FTSE 100 businesses

"Mobile and the web in general are impacting us the most. In the current climate, budgets are continually under pressure, so we are looking towards more web based services."

IT Director Major customer

"Our area is infrastructure installation and the biggest impact has been 4G LTE. I'd say progress has been bold but not reckless from operators, given the high cost of entry and the period for customer engagement and payback. We continue to be involved with the networks in the area of cell site sharing both on the de-commissioning and commissioning aspect. Operators stand to save significant sums and we see ourselves being involved in this for the longer term. We see networks outsourcing key positions; we have been responding to resourcing RFQs across all networks due to a general downturn and cost saving exercises."

Frank Masson Commercial Director, Hartwood Services

"Long Term Evolution (LTE) has had the largest impact. I'm looking forward to seeing the next step with LTE-A and the possibility to use the spectrum efficiently."

Alessandro Bovone RAN Systems Design Manager, EE

"Although budgets have remained the same, I've experienced IT skills shortages, and telecoms and Oracle ERP in particular have created delays."

Anon Public Sector

Changes to IT budgets

According to a report by Forrester Research[1], the UK IT market is expected to grow 4.6% in 2014 and although the European downturn will continue to put pressure on spending, cloud computing and mobile technology will see IT expenditure increase.

The majority of ARM's panel of CIOs and IT Directors reported flat IT budgets, although one FTSE 100 company reported a substantial increase in budget and another had increased budget for specific initiatives. This supports research by Gartner[2] research, which reported users in more mature IT environments, including Western Europe, expecting either flat or lower IT budgets 2014 – 2015.

Gartner also predicts increased demand for cloud services – driven by economic pressure and limited resources – with mature markets opting for public cloud services. CRM is predicted to surpass ERP as the top application software investment priority, whilst security software will top infrastructure software in companies' investment priorities, as new threats coupled with evolving working practices force the issue to the fore.

Which skills are most in demand?

"The skills most in demand will be in depth technical expertise in mobile/fixed telecommunications industry; experience of working in GERAN, UTRAN and LTE design, or planning environment knowledge of all RAN interfaces."
Alessandro Bovone RAN Systems Design Manager, EE

"The skills most in demand are network architects and planners. Riggers also appear to be in short supply – given the network share work coming up 2013/14. I'll be looking to recruit installation engineers with Ethernet/ fibre/ ac power experience and qualifications."
Frank Masson Commercial Director, Hartwood Services

"There is most demand for Project Management resources who understand the end-to-end picture and not technical silos. So many people have skilled up in silos over the last 10-20 years, driven by structures and putting resources into structure silos. Multi-disciplinary, cross-functional teams are what are needed."
Anon Public Sector

"There's currently a large requirement for hybrid business, IS and transformation skills. Most FTSE 100s will have outsourced providers for the operational and technical skills. However, the skills that focus on the business (and specific business processes) are rare to find, especially if there is a need for change implementation and sector specialisation. IT skill shortages haven't impacted the choices I'm making for our business because, when the need for the business is paramount (and if the business case is strong enough), you will almost always find the skills you need."
Group CIO FTSE 100 businesses

"I believe the skills most in demand are currently JavaScript and .net developers."
IT Director Major customer

[1] Continued Gloom for European ICT Markets – A BT Futures Report, Forrester Research, July 2013.
[2] User Survey Analysis: Cloud and CRM Nexus Will Drive Enterprise Software Spending in 2013 and 2014, Gartner, February 2013.

🔍 Case Study

Ben Jones
CTO, Euromoney Institutional Investor

Ben is Group CTO, working across Euromoney Institutional Investor's global media and data information business. A passionate customer and delivery focused IT leader, Ben's previous industry experience includes media, FS and Retail, plus top-tier consultancy foundation.

What technology has impacted your business the most in the last 12 months?
"Definitely mobile development; building our mobile presence and digital platforms, and going even further down the digital road with the implementation of HTML5 and User Experience (UX) people."

Which skills are, in your opinion, currently the most in demand?
"Mobile development skills are critical; more so than BYOD and virtualisation."

Thinking about IT skill shortages, have these impacted the choices you make when choosing new technology for your business?
"To be honest, I'm not worried about skills shortages. What does concern me is the retention of talent. There's been an increase in average candidates coming into the marketplace and demanding higher salaries."

How has your IT budget changed over the last 12 months?
"It had increased by 50%. We've made some big investments especially around Delphi and digital."

What roles are you currently hiring/planning to hire?
"I'm looking for Architects, UX Designers, Developers, Development Managers and Mobile Developers."

Which emerging tech excites you the most?
"Definitely the tech that's going to generate revenue and growth for the business: Open source code databases, particularly MongoDB and Cassandra."

Which skills due you foresee the greatest demand for in 2014?
"In a nutshell, these would be mobile development and open source skills."

What will be the greatest technological challenge for your business next year?
"I have to deliver a lot of projects. The challenge will be delivering these to the speed of technological change, which is increasing time to market for products."

If you had a magic wand, what would you change?
"I'd increase loyalty and retention and produce better working environments (work life balance). I'd want to develop our strategy to focus more on individuals; to improve the softer work life balance benefits, such as working from home and increased flexibility."

"Mobile development skills are critical."

Case Study

Ian Massingham
CTO, EMEA Service Providers EMC

Ian is responsible for pre-sales and technology strategy for EMC's service provider segment in Europe. His team works with cloud providers and organisations that provide IT as a service, to help them build service offerings.

Thinking about your clients, what has had the most impact on them this year?
"Service delivery providers operating at scale are increasing their levels of automation and adopting more industrialised techniques. Scale, efficiency and the ability to perform cost recovery is what's really important to them. They're also investing in user experience, so that their IT services can be easily consumed."

What emerging technology excites you most?
"Choice of storage platform is polarising. For extreme high-performance this means solid state storage with advanced software features to enable availability, replication and performance. For extreme availability of large scale low-cost storage, there's a move towards software-based architectures. Genuinely new architectures are coming to the fore, which enable very cost-efficient long-term data storage where performance is less critical."

How will that change the skill sets that are required by businesses?
"We will need more people with cross-domain skills in networking, storage and some of the software components. Software developers will become even more important as the field of applications bleeds into infrastructure management. There's more demand for software skills in areas traditionally populated by Systems Administrators. People now have a heavy focus on development in things like Buffett, advanced VMware tools and OpenStack; lots more resources are being orientated towards software development for IT operations. A new role is emerging in enterprise IT; the traditional Business Engagement Manager role is changing into an IT Product Management role.

How well resourced do you think the enterprises will be to meet the challenges?
"There's a global skills shortage. Much of the expertise is either dragged to the US or aligned to a small number of high profile organisations that have gravity in terms of talent attraction, such as Google, Facebook and Amazon. This brain drain could leave a skills deficit in some really critical areas of transformation."

What would be your main recommendation to your customers?
"Make a fresh assessment of how you 'do' IT; is there a more optimal way for your business to deliver IT infrastructure and application services? For intermediary organisations delivering cloud services, I'd recommend looking to your supply chain for innovation and increased competitive advantage to put your organisation in the best position to attract and retain talent."

What do you encourage IT business leaders to be considering?
"Technology delivery is fundamentally shifting; new models are emerging that offer increased agility, greater competitive advantage and lower requirement for CAPEX. End users need to look at their supply models but balance this against the regulatory risk and compliance environment they work in. Insiders probably think the cloud has already happened but less than one-thousandth of global IT expenditure is on public cloud services."

◉ Future Trends: Market Outlook

What emerging technology excites you the most?

"We are expecting telephony contact to continue reducing; more and more will be transacted via mobile devices, with customers expecting increasing levels of personalisation. As such, we'll see growing demand for mobile and web service developers, plus user interface designers in 2014. One of the greatest challenges for business will be overcoming old legacy systems – particularly those that require Oracle forms skills."

IT Director Major customer

"Mobile technology and predictive analytics excite me the most, as these will fundamentally affect our ways of working because two-thirds of our workforce is mobile."

Director Energy Sector

"I'm most excited by supply chain, web services and Oracle Fusion. For small and mid-tier business, there is huge potential for real cloud services. The biggest challenge for businesses will not only be to understand technologies, but also the opportunities and challenges that go with them."

Anon Public Sector

"The most exciting tech for me is Long Term Evolution (LTE) and I'm looking forward to LTE-Advanced, which will enable efficient use of the full spectrum. We are expecting new features and hardware evolution from our vendors, which will raise the bar on speed and load."

Alessandro Bovone RAN Systems Design Manager, EE

"Current 4G technology is only the start as I see it. Machine 2 Machine (M2M) is also pretty exciting. I think there will be a lot of demand for creative and commercial telecoms architecture experts in 2014. These will be the people who truly see the worldwide picture and can form alliances, ideas and infrastructure technology inventions. There's still a high degree of 'techy speak', which needs to be more intuitive. If you look at adoption levels for 4G for example, I'm positive that when confronted with the latest creation, over 90% of consumers feel it's either out of their grasp or isn't aimed at their lifestyle. We need to target the same speed of adoption levels we witnessed in the home computer market."

Frank Masson Commercial Director, Hartwood Services

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What will be the greatest technological challenge for your business in 2014?

"I have to deliver a lot of projects. The challenge will be delivering these to the speed of technological change, which is increasing time to market for products."

"Understanding new technologies, plus the opportunities and challenges that go with them."

"All our legacy systems, which need oracle forms skills."

"EDW technology."

"Small cell and interpolarity between vendors on different layers. Expansion of coverage and spectrum usage too."

"Mobile technology will be our greatest challenge."

Summary

Planned hires

Regarding planned hires for 2014, our interviewees expressed the most demand for Business Analysts and Project Managers. Second most popular were developers for mobile and JavaScript, plus IT Architects and UX Designers.

Magic wand

We asked our panel what they would change if they had a magic wand. The majority wanted to improve staff retention and loyalty – citing better working environments, flexibility and work life balance as key. There was also a desire to build a team of permanent staff with broader, cross-domain skills; a team comprised of individuals who could (and would agree to) be moved to meet the businesses' changing requirements.

The technology industry is suffering acute skills shortages and it was felt that salaries were now of alignment with skill levels, as brands battle to attract the top talent to their businesses. A desire was expressed for a team dedicated to proactively seeking out emerging technology – but given the current climate many businesses will remain purely reactive.

£ Skills in Demand: Average Salaries

Skills	South & London	Midlands	North	Wales	Scotland
Business Analyst	£45,000 – £70,000	£45,000 – £65,000	£40,000 – £50,000	£40,000 – £50,000	£40,000 – £50,000
Business Change Manager	£50,000 – £70,000	£40,000 – £60,000	£40,000 – £60,000	£40,000 – £60,000	£40,000 – £60,000
Business Intelligence (SAS Developer/Programmer/DI Studio, Insight Analyst, Data Architect)	£45,000 – £75,000	£35,000 – £55,000	£35,000 – £45,000	£35,000 – £45,000	£35,000 – £40,000
Cloud Architect	£65,000 – £80,000	£55,000 – £70,000	£60,000 – £75,000	–	£55,000 – £65,000
CRM - Analysts	£40,000 – £50,000	£40,000 – £50,000	£40,000 – £50,000	£35,000 – £45,000	£40,000 – £50,000
CRM - Architects	£60,000 – £90,000	£50,000 – £70,000	£50,000 – £70,000	£45,000 – £65,000	£50,000 – £70,000
Security Architects	£55,000 – £70,000	£45,000 – £65,000	£45,000 – £55,000	£40,000 – £50,000	£40,000 – £50,000
Development (JAVA, C#, .NET, JavaScript, Azure)	£50,000 – £65,000	£35,000 – £50,000	£35,000 – £50,000	£35,000 – £45,000	£35,000 – £50,000
iOS/Android Mobile Developer	£45,000 – £70,000	£40,000 – £55,000	£40,000 – £55,000	£40,000 – £55,000	£40,000 – £50,000
IT Director	£75,000 – £110,000	£65,000 – £90,000	£65,000 – £90,000	£60,000 – £80,000	£70,000 – £95,000
Lead Auditor (ISO 27001)	£55,000 – £70,000	£45,000 – £60,000	£45,000 – £60,000	£40,000 – £50,000	£40,000 – £50,000
Mobile/Endpoint Security Consultant	£50,000 – £65,000	£45,000 – £60,000	£50,000 – £60,000	–	£45,000 – £55,000
MS BI Stack (SSIS, SSRS, SSAS)	£55,000 – £70,000	£40,000 – £50,000	£40,000 – £50,000	£35,000 – £45,000	£45,000 – £50,000
MS Dynamics	£50,000 – £70,000	£45,000 – £55,000	£45,000 – £55,000	£35,000 – £45,000	£45,000 – £55,000
Oracle OBIEE Stack	£55,000 – £85,000	£35,000 – £45,000	£35,000 – £40,000	£30,000 – £40,000	£35,000 – £45,000

Skills	South & London	Midlands	North	Wales	Scotland
Oracle Fusion ERP	£55,000 – £75,000	£40,000 – £50,000	£45,000 – £55,000	£40,000 – £50,000	£35,000 – £45,000
Penetration Tester (CREST/Tiger)	£40,000 – £50,000	£35,000 – £70,000	£35,000 – £45,000	£35,000 – £45,000	£35,000 – £45,000
PMO Manager	£55,000 – £70,000	£40,000 – £50,000	£40,000 – £50,000	£35,000 – £45,000	£40,000 – £50,000
Programme Manager	£60,000 – £90,000	£60,000 – £80,000	£60,000 – £80,000	£55,000 – £65,000	£60,000 – £80,000
Project Manager	£50,000 – £70,000	£45,000 – £60,000	£45,000 – £60,000	£40,000 – £50,000	£45,000 – £60,000
Storage Architect	£65,000 – £80,000	£45,000 – £60,000	£45,000 – £60,000	£40,000 – £50,000	£40,000 – £50,000
SAP Architect	£65,000 – £80,000	£60,000 – £70,000	£65,000 – £70,000	£55,000 – £60,000	£65,000 – £70,000
SAP Technical Consultant/ Developer	£55,000 – £65,000	£50,000 – £60,000	£55,000 – £60,000	£45,000 – £50,000	£55,000 – £60,000
SAP Functional Consultant	£55,000 – £65,000	£45,000 – £55,000	£50,000 – £55,000	£45,000 – £50,000	£50,000 – £55,000
SAP Project Manager	£60,000 – £70,000	£55,000 – £65,000	£60,000 – £65,000	£45,000 – £50,000	£50,000 – £55,000
SAP Basis/Netweaver Analyst or Consultant	£50,000 – £60,000	£40,000 – £50,000	£45,000 – £50,000	£40,000 – £45,000	£45,000 – £50,000
SIEM Consultant	£55,000 – £65,000	£40,000 – £50,000	£40,000 – £50,000	£35,000 – £45,000	£40,000 – £50,000
Virtualisation Architects	£60,000 – £75,000	£50,000 – £65,000	£50,000 – £65,000	£45,000 – £60,000	£45,000 – £60,000
VoLTE Architect	£65,000 – £80,000	£60,000 – £75,000	£65,000 – £75,000	–	–
LTE Architect	£55,000 – £65,000	£50,000 – £60,000	£55,000 – £65,000	–	–

Source: Advanced Resource Managers internal data, January – June 2013.

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"Business Analysts & Project Managers."

"Creative and commercial telecoms architecture experts! These will be the guys/girls that can truly see the worldwide picture and can form alliances, ideas, infrastructure, technology, and inventions."

"Mobile and web service developers, UI designers."

"There will be an increased need for people with cross-domain skills in networking, storage, and also some of the software components."

"Mobile technology."

"In a nutshell, mobile development and open source skills."

"There's more demand for software skills in areas traditionally populated by Systems Administrators."

"There is a new role emerging in enterprise IT; what used to be a Business Engagement Manager role is changing into an IT Product Management role."

Have skills shortages impacted the choices you make in choosing new technology?

Most of our interviewees said that skills shortages hadn't had a significant impact on the choices they were making for their businesses. Many companies have the resources to employ consultants with specialist skills if the business case supports this.

"As we are a BI team, it is important that new staff members have all operated in that environment previously and have a good understanding of the field."

Philip Bingham Manager, Corporate MIS, Allianz

"To be honest, I'm not worried about skills shortages. What does concern me is the retention of talent. There's been an increase in average candidates coming into the market place and demanding higher salaries."

Ben Jones CTO, Euromoney

"No – the need of the business is paramount and if the business case is strong enough, you will always find the skills (at almost any cost!)"

Group CIO FTSE 100

"IT skills shortages – in particular telecoms, Oracle and ERP – have created delays."

Anon Public Sector

"Not really – I will go to consulting firms if I really need the skills."

IT Director Energy Sector

Conclusions

The greatest challenges currently facing our panel of CIOs, IT Directors and Senior Consultants are those involving data management and security, cloud services, BYOD and mobile technologies. The majority are facing the challenges of data security in light of new working practices, networks, big data and devices.

Issues with staff retention and attraction are widespread; as skills shortages dog the industry, staff with the most desirable IT skills are tempted by the highest bidder. It was felt that salaries were now out of alignment with skill levels, as brands battle to attract the top talent to their businesses.

Most of our interviewees reported no significant impact of IT skills shortages on the choices they were making for their businesses, especially as many had the resources to pay for consultants and specialist skills.

The majority of the panel's members reported flat IT budgets during 2013, although one FTSE 100 company reported a substantial increase in budget and another had large budgets for specific initiatives. According to Forrester Research[1], the UK IT market is expected to grow 4.6% in 2014 and, although the European downturn will continue to put pressure on spending, cloud computing and mobile technology will see IT expenditure increase.

Our panel is excited by the opportunities for boosting revenue and transforming their businesses offered by mobile and the cloud, data storage, open source databases, predictive analytics and 4G.

With regards to planned hires, our panel expressed the most interest in Business Analysts and Project Managers. Second most popular were developers for mobile and JavaScript, plus IT Architects and UX Designers.

The overarching goal of the majority of our interviewees was improved staff retention and loyalty. There was also a desire to build a team of permanent staff with cross-domain skills, who were agile in nature and would move skills and locations to meet the businesses' changing needs. It appears that changing working practices aren't purely for the benefit of employees, as businesses seek greater flexibility in the pursuit of revenue and competitive advantage.

"The **greatest** challenges are those involving data management and **security,** cloud services, **BYOD** and **mobile** technologies."

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1. Continued Gloom for European ICT Markets – A BT Futures Report, Forrester Research, July 2013.

ⓘ About ARM

ARM is a specialist technical recruitment consultancy providing IT, Engineering and Business Solutions jobs for contract and permanent staff in the UK and internationally.

What makes ARM different?

We are committed to matching the right people to the organisations that need their skills. Our focus on niche specialisms and our commitment to providing a high-quality service, sets us apart from other recruiters.

Recruitment specialisms

ARM Technology

ARM Technology's team works across a multitude of industries including: Media, Technology, Retail, Finance, and the Public Sector. It has a strong track record of placing Developers, Business Analysts, Project and Programme Managers and ERP professionals (in particular SAP).

ARM Information Security & Communications

The ARM Information Security & Communications team places high calibre contract/interim and permanent professionals into a range of businesses – from the vendors that develop and sell products and solutions, to the consultancies that provide integration and value added services, plus the end users that seek protection, assurance and compliance.

ARM Automotive

As Automotive specialists, the Automotive team offers an effective recruitment service based on its thorough understanding of the industry and an extensive network of engineers.

ARM Infrastructure & Built Environment

As market experts in the Built Environment sector, the team supplies a quality-led recruitment solution across Construction, Property, Rail and Infrastructure.

ARM Oil & Gas

The Oil & Gas team sources the best people for technical engineering and executive roles in the global Oil & Gas, Petrochemical and Marine industries.

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Contacting ARM

We hope that you have found our report useful. Let us know if you have any comments about this report or if you would like to contribute to future editions – contact bd@arm.co.uk with your suggestions.

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