

Computer Weekly

24-30 JANUARY 2023

News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it



BBC offers digital assurances

Parliament queries broadcaster's ability to achieve its digital ambitions and satisfy demands of licence fee payers

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Home

News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it

Advisory board financial goal for Post Office scandal victims

The advisory board set up to oversee compensation awards to 555 victims of the Post Office Horizon scandal has agreed a goal of returning them to the financial position they would have been in had the scandal not happened.

Datacentre exclusion from energy discount 'no cause for alarm'

The datacentre industry's omission from the list of sectors eligible to receive government-backed discounts on their energy bills from March 2023 should be no cause for alarm, industry watchers have claimed.

Uptime Institute predicts slower pace of public cloud migrations

The long-held view that moving to the public cloud is a low-risk, flexible and inexpensive alternative to on-premise IT will be challenged this year, prompting some firms with complex infrastructure needs to slow down or press pause on their migrations.

David Anderson KC to review surveillance laws

The Home Office has appointed David Anderson, a barrister, leading expert on surveillance law and former independent reviewer of terrorism legislation, to review the UK's surveillance law, the Investigatory Powers Act 2016.

Royal Mail promises 'workarounds' to restore services after attack

Royal Mail CEO Simon Thompson has apologised to consumer and business customers impacted by a likely LockBit ransomware attack on its systems, and promised a "workaround" for the near future.

Oracle and CBI: Companies cautious over 2023 investment

UK companies are taking a cautious and conservative approach to IT and general internal business investment in 2023, but with an eye to a post-crisis future, according to comments by spokespeople for Oracle and the Confederation of British Industry. ■

Entain and McLaren F1 aim to help women return to STEM careers

Entain and McLaren F1 have partnered to create a six-month science, technology, engineering and maths (STEM) returnship programme in roles such as software engineering, aimed at helping women who have taken a career break return to the sector.



CHRIS GRAYTHEN/ADOBE

- › Ukraine CERT leaders hold London-based talks.
- › Gartner: CIOs will struggle to retain and attract IT talent.
- › IT chiefs raise concerns over cost-of-living crisis.
- › Yorkshire Water taps Connexin for delivery framework.

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BBC assures UK Parliament digital transformation plans are on track

PAC probes broadcaster's senior management over plans to reconstruct organisation to be fit for purpose in modern media industry and satisfy multiplatform needs of licence fee payers. [Joe O'Halloran reports](#)

Just weeks after a report from the National Audit Office (NAO) cast doubt on the ability of the BBC to build a digital-first public service media organisation and manage the future demands of viewers and listeners, the Public Accounts Committee (PAC) has also questioned the corporation's capability in achieving its digital ambitions, with MPs expressing particular concern over any pushback on previously stated guarantees in how it could manage a vast increase in acquiring personal data on UK licence fee payers.

The BBC first announced its digital transformation plan in May 2022, with [said BBC director-general Tim Davie](#), a commitment to build a digital media organisation that made a significant positive impact culturally, economically and socially, and one that would be a global leader. Moreover, this would be an organisation that put digital first when creating content, and one driven by “the search for truth, impartiality, outstanding creativity and independence”.

To achieve these objectives, the BBC said it would reallocate money towards content that works in the on-demand world, such as the [iPlayer on-demand, live and catch-up TV platform](#), making

“tough choices” on traditional distribution and investing more in online services. Indeed, the BBC was planning for its digital services to be in at least the top three for market share in the UK in five years' time.

[In its assessment of the BBC's ambitions and performance to date](#), the NAO investigated whether the organisation had the capability to deliver value to its users from its strategic technology review (STR) of 2021. However, the report found that the [BBC's digital leadership needed to evolve to deliver its strategy more effectively and accelerate its digital growth](#). It also emphasised the fact that the BBC had less funding available to develop digital products than most other media organisations, many of which were digital-only.

The report added that the BBC had announced plans to invest about £50m extra annually on digital product development by 2025, but said its internal plan to support this lacked detail and the broadcaster had yet to finalise the budget for its digital-first strategy. The NAO also noted that increased use of digitisation, with a commensurate rise in the use of personal data, also exposed the

Home

News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it

 Home

 News

 BBC assures UK
Parliament digital
transformation
plans are on track

 Transforming,
refreshing and
mobilising IT
infrastructure at
Ford dealer group

 Editor's comment

 Buyer's guide to
composable business

 Indefinite storage:
What it is and why
you might need it

BBC to greater reputational risks if it did not meet best practice in acquiring, storing and securing personal data, and being transparent about its use.

[The PAC, under chair Meg Hillier](#), questioned Davie, along with BBC chief operating officer Leigh Tavaziva and chief product officer Storm Fagan. It reminded Davie of a [recent speech in which he outlined how digital offers a huge opportunity to unlock more audience value but requires big organisational change](#) and a radical overhaul of how the BBC uses data, the need for a world-class tech team, new operating models, new creative solutions and ideas. The PAC queried how new operating models were needed after the STR was established and indeed was the STR now defunct?

Davie explained to the committee that the December speech did not mean the STR was evolving and said it would not be rewound in any fashion. "Getting ourselves organised with product, tech and distribution was the right thing to do full stop. What I mean by operating model is that if you run television or content, we're going to create new operating models. Editorially, you're making sure you're doing the right thing for the iPlayer [for example]. That cuts across traditional silos."

Fagan added: "We've just come to the end of [the Strategic Technology Review of 2021]. We have implemented the changes and that's kind of set us up for everything. The next phase is broader across the organisation. There's no rolling back or changing from that implementation."

Tavaziva shed more light on what the new BBC would mean in terms of technical structure, noting that the broadcaster has split

The National Audit Office and the Public Accounts Committee have questioned the BBC's capability in achieving its digital ambitions and managing the future demands of viewers and listeners



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Home

News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it

what it used to call its design and engineering function into product areas, specifically teams designed to deliver digital products and services into technology teams that look after broadcast and online enterprise infrastructure. This also affected the running of underlying technology across the delivery of cyber security and more traditional areas such as distribution – that is, how the content reaches audiences.

“That enabled us to develop the leadership to build the capability Tim was talking about in his speech. The focus was not general technology capability, but technology [and] the way product teams work in an agile way – lots of tests and learn development, quick movement activity for digital services,” she noted. “That was essential for us to compete against the kind of product delivery that comes from a Netflix or Spotify and other competitors compared with the larger, more capital-intensive and recurring enterprise.

“It’s one thing to get our tech teams right and the capability [right], it’s another thing for all of the content creators to also start to understand changing audience habits and to think about how the audience receives the BBC. Not just through broadcast, but also through digital, and we have to optimise the capabilities and [support] multiple channels. We are moving some money out of the broadcast to enable more multimedia teams and [gain the] ability to have a stronger digital offer at the same time.”

While recognising that the corporation was working in what he said was an “incredibly challenging environment”, Davie was confident that the corporation was set up to make the requisite changes and that it could address concerns expressed by the NAO. In particular, he noted that the corporation had aggressive commercial

plans, building on success in the world of production, such as partnerships with the Walt Disney Corporation for *Doctor Who*.

The PAC also questioned the executives on the specific technology changes the BBC was facing and what digital product development was in place to overcome them. Fagan took this on, stating bluntly that one of the big challenges surrounded data.

“There is a big shift globally at the moment in terms of ability to access data and use it, and you can see that in the NAO report when they talk about the three key challenges we’ve got around

THE PAC WILL BE WATCHING THE BBC'S DIGITAL DEVELOPMENT VERY CLOSELY

search, recommendations and metadata. Those are all stemming from how much data is changing, how we use our data in our products, how we use the data to make the [user] experience simpler. When you move from broadcast to digital, you have so much more choice in terms of content.”

Concluding, Hillier thanked the BBC for what she called its “very bold” plan and said the PAC recognised the challenges the broadcaster faced, but warned that the committee would be watching the BBC’s digital development very closely as it was drawing public money at a time when there were other pressures on the corporation. She noted that the PAC would be producing a report on proceedings before Easter. ■

Transforming, refreshing and mobilising IT infrastructure at dealer dedicated to Ford

TrustFord has been through a complete digital transformation that embraces cloud, mobile working and automation. IT director Andy Pocock tells [Mark Samuels](#) what this has involved and the benefits it is seeing

Andy Pocock, IT director at vehicle dealership group TrustFord, has been with the organisation since April 2008. When he looks back on his time at the company, he says that – quite simply – there’s been a huge focus on [digital transformation](#). “We’ve had periods where there’s been heavy growth and a lot of movement,” he says. “Sometimes, when you’ve been somewhere for 14 years, you can’t see how far you’ve come until you take the time to look back. But we don’t often take the time to look back because we’re always looking forward to the next thing to do.”

TrustFord is the UK’s largest Ford-dedicated dealer group for new and used cars, vans, servicing and repairs. The company sells one in four Ford Transits sold in the UK. As the company continues to grow, Pocock says technology – from mobile to the cloud to [robotic process automation \(RPA\)](#) – will play a crucial role over the next couple of years.

“We will have enabled the business applications, which is the focus on mobility servicing, fleet management and the growth that’s occurring in those areas,” he says. “By 2024, we will have



Home

News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

Editor’s comment

Buyer’s guide to composable business

Indefinite storage: What it is and why you might need it

 Home

 News

 BBC assures UK Parliament digital transformation plans are on track

 Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

 Editor's comment

 Buyer's guide to composable business

 Indefinite storage: What it is and why you might need it

enabled the digital transformation of processes that are currently manual or paper-driven. And we will have enabled business to be conducted anywhere. We will have totally transformed and refreshed the infrastructure and made it all mobile.”

TAKING ON THE CHALLENGE

Pocock worked in large retail and distribution organisations, such as Dawson News and Sainsbury's, before joining TrustFord. After many years working for companies with mature IT estates, he recognised the potential for a technology-led transformation.



“WE’VE HAD TO ADJUST OUR PROCESSES, SYSTEMS AND HARDWARE TO SUPPORT THE MOVE TO [HYBRID]”

ANDY POCOCK, TRUSTFORD

“I was a little bit surprised at the how TrustFord hadn't perhaps embraced technology in the same way as some of the other companies I've worked with, but I also knew this was a great opportunity to make a difference,” he says.

Since joining TrustFord, Pocock says there have been big changes to the underlying infrastructure. When he first arrived,

the company's datacentre was based in a room above a Transit Centre in York. Now, TrustFord has [colocated datacentres](#) and the direction of travel more generally is to move systems and services to the cloud.

Across that transformation process, Pocock has worked in close harmony with his IT team. He describes himself as “not a detailed technical person”. Instead, he helps the business make the most of technology that's already in the company or available on the marketplace.

“My role has always been to interpret trends and to make recommendations to the board or the leadership team,” he says. “My responsibility is to both interpret the direction and strategy of the company and, as far as possible, provide an infrastructure and an IT group that's suited to that strategic direction.”

SUPPORTING MOBILE WORKING

Like his technology peers in other organisations, Pocock has overseen a massive shift to mobility during the past two years. When the [coronavirus pandemic made social distancing an obligation](#), the IT team provided systems to ensure their line-of-business employees could stay safe and productive. That shift in provision has led to some permanent changes, too.

“A lot of our colleagues are now hybrid and we've had to adjust our processes, systems and hardware to support that change,” he says. “The major transition over the past couple of years has been to move to a more virtual organisation.”

TrustFord has tripled the size of its laptop estate during that timeframe. The company also has plans to replace the rest of

Home

News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it

its fixed endpoints with new laptops over the next 18 months. “Everyone’s now mobile, which provides freedom in terms of where they’re working and how they work, but also potentially in how they deal with customers,” says Pocock.

As part of the move towards mobile working, TrustFord has implemented Druva technology to create a holistic approach to data protection. The company uses [Druva’s software-as-a-service technology](#) to create what Pocock refers to as an “air gap” between its physical locations and off-site backups.

TrustFord has been running Druva’s InSync product, which is a remote backup service for endpoints, for 18 months. The technology backs up employees’ 850 laptops automatically and allows staff to pull data back whenever they need to. The technology also includes a self-service portal.

Pocock’s team is currently deploying Druva’s Phoenix service, which will provide backups for the company’s on-premise server and file-storage environment. In the future, Pocock says his IT team will start to think about how the company will back up data in the cloud. “If I think about data in my estate, we back up all endpoints. We will be using it to back up server environments or shared storage file shares, and then – in the future – there is the potential for backing up cloud data,” he says.

MAKING THE MOST OF AUTOMATION

Pocock says RPA has been another priority investment area for the business. TrustFord uses the technology to automate existing processes and to help introduce new processes that might otherwise be completed manually.

One area where the company uses RPA is to input data automatically. Instead of relying on someone keying in information, the business can run the technology overnight and push data to its key business services. Pocock says the impact of automation is considerable.

“RPA improves accuracy, it improves speed and it provides more flexibility around when we run these processes. Automation just gives us much greater capacity for processing large amounts

“WE PICK USE CASES THAT REALLY GET THE MOST BENEFIT OUT OF RPA. IN 2021, WE ESTIMATE WE PROCESSED NINE MILLION TRANSACTIONS THROUGH RPA”

ANDY POCOCK, TRUSTFORD

of data,” he says. “We pick use cases that really get the most benefit out of RPA. That means we think about things like, ‘Is the data repeatable? Is it clean? Is it available?’ And that approach has made a huge difference to us. In 2021, we estimate we processed nine million transactions through RPA.”

Pocock says the automated use of MOT data provides another example of how TrustFord applies RPA. In the past, the company’s



 Home

 News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

 Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it

employees had to go online and manually check MOT records on the government's databases. Now, that process is completed automatically.

"We just take a file of vehicle identification numbers or registration plates, and we can access the government-supplied application automatically. That whole process increases the accuracy of our data. It also means we have a better grip on our information and that we're contacting customers when they want to be contacted."

DEVELOPING CAPABILITY INTERNALLY

Pocock's team hasn't relied on an external provider to help create its RPA capability. Instead, the automation technology has been created in-house. The development work behind this implementation might have been challenging but it's also paying big dividends.

"It's been a long journey," he says. "And it's probably fair to say that, up until about four or five years ago, it was one of the best kept secrets in the business. We used RPA primarily to do things that helped us in the IT department. But then, all of a sudden, the rest of the business woke up to the scale of the opportunity."

Business units are now thinking about how RPA can be used to release staff from manual activities and create more value for the business, says Pocock: "We have a stream of requirements from internal customers who want us to automate what they're doing."

He explains that there wasn't a conscious decision to develop RPA internally rather than use tools from an external provider. Rather than creating an explicit automation strategy, Pocock says the use of RPA "grew by stealth". Today, senior managers in the business recognise the company possesses strong specialist capability in a fast-growing area.

 Home

 News

 BBC assures UK
Parliament digital
transformation
plans are on track

 Transforming,
refreshing and
mobilising IT
infrastructure at
Ford dealer group

 Editor's comment

 Buyer's guide to
composable business

 Indefinite storage:
What it is and why
you might need it

So, where next? Could TrustFord start selling that RPA capability externally? For now, Pocock says the company is firmly focused on its internal efforts: "We want to drive further value to our business. We see it as a jewel in the crown. It's a great enabler for us and our focus is still on continuing to use that enablement for our own business."

TRANSFORMING FLEET SERVICES

As well as continuing to hone its automation technology, Pocock says his team's key priority during the next couple of years will be to help the business make the most of other digital technologies, especially in the area of fleet management and mobile service.

"The fleet business is data-driven and there's huge volumes of information," he says. "Our fleet leadership has, in the past, been quite disparate, with data in different locations, and we've brought that together into a single place. We've got some large deals now to supply fleet for some pretty major distribution companies."

When it comes to developing TrustFord's mobile servicing capability, Pocock says the key is to support customers in innovative ways. Rather than having to visit the company's service centres, TrustFord's fleet teams will visit distribution centres and service client vehicles on site. Pocock says technology will back this initiative.

"We're developing applications that support the capability to service vehicles," he says. "That work includes things like remote updates, where everything that we would normally do in a dealership – when we've got a car in for service or a vehicle in for service – can now be done remotely on the road."

Pocock's team supplies its specialist staff with the technology to contact base. This technology includes laptops, iPads and applications that are used to update vehicle records remotely and to create a real-time update of data. The technology also allows people back at base to communicate with mobile service technicians when they're out on the road.

“WE’RE DEVELOPING APPLICATIONS THAT SUPPORT THE CAPABILITY TO SERVICE VEHICLES. THAT INCLUDES THINGS LIKE REMOTE UPDATES, WHERE EVERYTHING WE WOULD NORMALLY DO IN A DEALERSHIP CAN NOW BE DONE REMOTELY ON THE ROAD”

ANDY POCOCK, TRUSTFORD

"If we need to reroute or change their schedules, we can do all that remotely," says Pocock. "These people on site can also record any damage and run health and safety checks online. The technology we provide them with is pretty prosaic, but it's our ability to communicate with them while they're out and about that has really developed." ■

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Tech firm lay-offs: a boon for corporate IT?

People on the supply side of the IT industry are having a torrid time. There are lay-offs aplenty. Not to pick on Salesforce, but the socially responsible firm revived the ancient Roman practice of decimation – executing every tenth soldier in an under-performing legion – laying off 10% of its workers at the start of January. CEO Marc Benioff said the company had over-hired during the pandemic. His co-CEO Bret Taylor is also exiting.

Salesforce is not alone. The economic downturn is starting to hurt the major tech firms. Last week, Microsoft said it would be cutting 10,000 jobs. Towards the end of last year, Meta said it was reducing its workforce by 13%, while Amazon said it would cut 18,000 jobs.

Will the supply side of the industry's misfortunes be good fortune for corporate IT? Might these lay-offs be a bonanza for CIOs struggling to fill vacancies?

A senior partner at McKinsey expressed this sentiment at a session the strategy firm gave at the World Economic Forum in Davos. Kate Smaje, global leader of McKinsey Digital, said: "On the tech talent side, there's been a lot in the news around some of the big tech firms making lay-offs of tech talent. And I've talked to a number of corporates this week who are saying: 'Wow, this is our time, finally we're going to have access to that talent in a way that we just haven't had in the last few years.'" And so, for their own digital transformation programmes, corporates have breathed in a sense of "real optimism" overnight.

On the other hand, looking at Microsoft chief Satya Nadella's official statement regarding the job cuts, there is no reason to believe the tech sector will simply stop [innovating during these difficult times](#). On the contrary, Nadella described the economic downturn as "showtime for our industry and for Microsoft". To succeed, Nadella said Microsoft needs to align with what he describes as "the world's success". For a tech firm, this means investing in the next major wave of computing, such as advances in artificial intelligence, to support businesses and the public sector.

No one can be certain how these things will play out. Gartner's latest forecast shows that corporate IT spending is set to continue to be invested in software and services. Gartner distinguished analyst John-David Lovelock believes CIOs will find it hard to compete on tech talent with the IT sector – where the business is technology, which enables tech firms to offer prospective candidates a potentially better career path. If he's right, IT leaders may well find they need to ramp up their own supplier management skills, contracting with external IT service providers strategically to fulfil their digitisation ambitions. ■

Cliff Saran, managing editor (technology), and Brian McKenna, business applications editor

IS COMPOSABLE BUSINESS BECOMING ESSENTIAL?

Composability is expected to be a key criteria for business application planning by next year.
Marc Ambasna-Jones considers its merits

“Life’s what you make it,” sang the synth-pop post-rock band Talk Talk in 1986 – perhaps a suggestion we should all take on board when considering the predictions for 2023. Economic forecasts are starting to make Nostradamus look like a fun dinner party guest, so when we start seeing stories about composable computing being the answer to troublesome times, it’s worth exploring.

A year ago, Gartner was predicting that composability would be one of the biggest tech trends of 2022. In [2020, it defined composability](#) as: “[A means of] creating an organisation made from interchangeable building blocks. The modular setup enables a business to rearrange and reorient as needed depending on external (or internal) factors like a shift in customer values or sudden change in supply chain or materials.”

It outlined four principles: more speed through discovery; greater agility through modularity; better leadership through orchestration; and resilience through autonomy.

The idea that organisations could [architect businesses for real-time adaptability](#) and resilience in the face of uncertainty is an interesting one. Organisations using technology based on modular, packaged business capabilities rather than having to fit processes and plans around the prescribed functions of large software applications is certainly a shift in approach.

[Kim Sneum-Madsen](#), CEO of open source content management system company Umbraco, works with the UK’s Royal Navy and The Royal College of Surgeons. He believes the composable approach to app development is increasingly important, not just to adaptability but to future-proofing IT investments.

 Home

 News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

 Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it

“The economic situation will force companies to focus their budgets on technology that directly benefits customer experience and brings in more revenue,” says Sneum-Madsen. “No one wants to pay hefty software licences for features they’re not using and which don’t directly benefit the bottom line. This will drive more companies to adopt a composable approach to their tech stack, which allows them to blend best-of-breed technologies that keep pace with consumers’ expectations.”

As Joe Cicman, senior analyst for digital transformation at Forrester, points out in his [blog](#), the problem is that organisations have become used to doing enterprise tech in a particular way, bolting on subscription software to core enterprise resource planning (ERP) tools, for example, so they can meet the changing needs of departments.

Cicman writes: “Every day I asked myself, ‘how is it possible for one vendor to create one product that works across multiple industries and grows in scope as a company’s digital remit grows?’ After talking to the vendors, turns out ... it’s not possible.”

Sneum-Madsen’s work with the Royal Navy is a good example of this, where Umbraco’s “composable architecture and headless CMS” has been the control centre for the MyNavy app. It has a huge remit, in that it has to be all things to all people, providing training and career planning, healthcare management, family support and arrangement of travel, among other functions.

Currently used by 35,000 people across the globe, MyNavy allows for the sort of flexibility required to meet the varying needs of users, integrating the most appropriate third-party applications, rather than being locked into a single supplier’s feature set.

TO THE MACHs

It is this idea of future-proofing enterprise technology and enabling personalised experiences across a broad range of functions that sits at the heart of the [MACH Alliance](#), a not-for-profit industry body of over 70 members dedicated to “open and best-of-breed enterprise technology ecosystems”.

If you are wondering what MACH stands for, it is, according to the alliance, an industry tech standard for modern technology. The prerequisites to achieve this standard are: microservices based; application programming interface (API)-first; cloud-native software as a service (SaaS); and headless, where front-end presentation is completely decoupled from back-end logic and designed to be channel-, programming language- and framework-agnostic.

“MACH is absolutely the right way to go about it,” says Steve Nolan, CTO at [Boohoo](#). The online retail brand, which has endured a roller coaster few years, has been very acquisitive. Its stable includes PrettyLittleThing, Karen Millen, Debenhams, Dorothy Perkins, Warehouse, Burton, Oasis, Coast, Wallis and Nasty Gal.

GARTNER DEFINES COMPOSABILITY AS A MEANS OF “CREATING AN ORGANISATION MADE FROM INTERCHANGEABLE BUILDING BLOCKS”

 Home

 News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

 Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it

The business was built on a Sage 200 financial management back end, but as it grew rapidly – just under £2bn in sales, according to its financials, from its 14 destinations and 19 million active customers globally – the need for scalability and flexibility exposed a few problems.

“It was hard to make changes and it was creaking,” says Nolan, adding that the business needed a more adaptive, cost-effective infrastructure that would also optimise the supply chain operation and improve efficiencies. The plan was to jettison bolted-on applications that sat on top of the Sage system and replace this with a composable MACH architecture, plugged into Microsoft's Dynamics 365 ERP system.

The company's multiple products were then centralised in a single Akeneo product information management (PIM) system. “You didn't need an IT degree as a business user to utilise the PIM,” adds Nolan. “The digital back end has revolutionised the way the business operates.”

However, it's not all plain sailing. Nolan admits that differentiating between caching static data and changing personalised data for performance needed attention and, even in the age of open APIs, integration between systems has not been easy.

The problem is that what works to composable computing's advantage – the modular nature and open ability to connect with other applications – is also, at the moment at least, a disadvantage. When it comes to collaborating with other businesses – in



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 Home

 News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

 Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it

a supply chain, for example – there is a need for suppliers to embrace a similar approach to data. Despite the open, easy-to-use intentions, there are complexities and a requirement for skilled integrators to make it work.

“You can't have business composability if the tech components can't be easily integrated, and their underlying data accessed and moved,” says Bryan Oak, co-founder of Kompozable, an expert in integrating composable architectures. “This could be to complete a business process or to liberate the data for decision-making. Having the ability to move and fit together different tech components within a business will be key to achieving the vision of composable business.”

There is also a need for clear communication and collaboration across different teams, departments and suppliers. Without this, composable computing systems can't be properly managed or implemented, according to Vicky Grobbelaar, founder of Ethiqs Legal, a boutique law firm for tech. “They rely on a robust infrastructure to support the scalable nature of the system, which makes implementation costly, both in time and money. While they can provide better security, it doesn't come without risks,” says Grobbelaar.

“Due to the modular nature of the systems, it's often harder to monitor and control access to sensitive data. It can become complex to manage as it usually requires a business to manage and

maintain multiple individual components, increasing complexity and overheads,” she adds. “Businesses might become ‘stuck’ with particular vendors as the use of certain components and technologies in the system can make it trickier for a business to easily change vendors in the future.”

Almost certainly, the advantages outweigh the disadvantages, but this is far from the plug-and-play image, for the moment at least. There's a bit more to it than that, and for any business look-

ing to become more composable, it is something of a cultural as well as a technical journey.

“Thinking and architecting for composability is the logical first step, but putting it into practice will take some creativity,” says Kompozable's Oak. “By leading with data architecture, you can make better decisions about master data management and integration of transactional data to drive better decision-making. I predict that

organisations will get behind the inherent benefits that composable business has the potential to yield. Businesses will realise that organisational design and culture has a big part to play in getting composability to work.”

COMPOSABILITY IN ACTION

If you are looking for evidence, there is plenty. As well as the MACH Alliance's work with Boohoo and Umbraco's work with the

**“HAVING THE ABILITY TO MOVE
AND FIT TOGETHER DIFFERENT TECH
COMPONENTS WITHIN A BUSINESS
WILL BE KEY TO ACHIEVING THE
VISION OF COMPOSABLE BUSINESS”**

BRYAN OAK, KOMPOZABLE

[Home](#)

[News](#)

[BBC assures UK Parliament digital transformation plans are on track](#)

[Transforming, refreshing and mobilising IT infrastructure at Ford dealer group](#)

[Editor's comment](#)

[Buyer's guide to composable business](#)

[Indefinite storage: What it is and why you might need it](#)

Royal Navy and The Royal College of Surgeons, composability has already reached into organisations across sectors.

“There are many examples of organisations that have successfully implemented composable business computing, including major companies in industries such as finance, healthcare and retail,” says Abdul Rahim, an IT professional and CEO of tech blog Software Test Tips.

“One well-known example is the UK retailer Tesco, which uses composable systems to quickly and easily create and deploy new applications and services, and respond more quickly to changing customer needs and preferences,” adds Rahim.

Ethiqs Legal's Grobbelaar points to composability being used at Durham University, while MuleSoft is working with [Crown Agents Bank](#), a UK-based provider of global payment services, on using a composable approach within its digital transformation strategy.

In that sense, Gartner was certainly right that 2022 would be a big year for composability, but that was just the start. Given all the talk about efficiencies and increasing agility, and the economic pressures to come, 2023 is going to be an even bigger year for composability. The ability to shape and match technology capabilities with needs is not without its challenges, but there's enough evidence to suggest it will be worth the ride. ■

THE INS AND OUTS OF INDEFINITE STORAGE



Indefinite storage addresses the issue that archived data may need to be kept well beyond the lifespan of the technology it was written for. [Stephen Pritchard](#) finds out what it is and why you might need it

HOME

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For hundreds of years, any organisation that needed to store information relied on one tried and tested technology: paper. But since the advent of computing and digital data storage, more and more data has been captured and stored electronically in [digital archives](#).

But now organisations need to retain archived data for longer – for business and regulatory reasons – can storage technology keep up? With careful management, [paper archives](#) last for decades, if not centuries. No computer system is older than 80 years, but there are industries that face the prospect of archiving data for 100 years or more.

With the operating [lifespan of a standard hard drive](#) at just three to five years, IT departments need to know how to store data for future generations: so-called indefinite storage. There is no industry standard for indefinite storage, as it very much depends on the use case. In practical terms, “indefinite” need not mean “forever”. Rather, it means to hold data without a specified retention period.

Most CIOs would interpret this as [beyond the lifespan](#) of standard storage technologies. In some industries, critical data need only be kept for a few years, but in others it will mean the expected lifespan of an individual, or the predicted working life of a piece of equipment, with a few years’ margin on top.

The challenge is that few types of electronic storage media are designed to keep data safe and accessible for very long periods.

EXPECTED WORKING LIFE OF COMPONENTS

Manufacturers [specify the expected working life of components](#) such as hard drives or solid-state drives (SSDs). A

 Home

 News

 BBC assures UK Parliament digital transformation plans are on track

 Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

 Editor's comment

 Buyer's guide to composable business

 Indefinite storage: What it is and why you might need it

typical “consumer” hard drive should last for three to five years. Enterprise-grade drives might last a little longer, perhaps seven years. SSDs are theoretically more durable, with a design life of up to 20 years. However, much will depend on how storage media is used. SSDs will wear more quickly if the application makes [a lot of writes](#), for example.

As Tony Lock, director of engagement and distinguished analyst at Freeform Dynamics, explains, storage arrays can theoretically carry on working forever. As data is stored for longer, it becomes a question of hardware management, monitoring for faults and swapping out components as they age. “There are lifetimes on equipment,” he says. “As the kit gets older, you have to accept there will be more chance of failure. How important is that information to you and what sort of data protection do you add?”

On-premise [RAID systems](#) are designed to add exactly that protection. And the “hyperscaler” cloud providers, which use large quantities of low-cost hardware, will swap out whole aisles or even whole datacentres as hardware nears the end of its service life.

Increasingly, this allows customers and cloud service providers to swap out traditional, but less flexible, long-term media such as optical drives or magnetic tape. Tape, in particular, needs careful physical management if used for long-term storage.

WHY DO WE NEED INDEFINITE STORAGE?

As organisations look to extract more value from their data, and storage costs fall, there is a clear trend towards keeping more data, for longer. Firms might want to use data for advanced analytics, or to train artificial intelligence systems.

There are also regulatory demands to keep data for longer. Healthcare and financial services are just two areas where organisations can be required to keep records for the lifetime of

the customer or patient, and a number of years after that. In the UK, for example, a patient’s record must be kept for 10 years after death. Organisations that need a 360° view of the customer, under fraud prevention laws, will also need to keep data for longer.

Even education sector data, such as degree transcripts, need long-term retention. Manchester University, for example, holds elec-

tronic records for its students from 2007, and has paper records going back to before 1978.

More broadly, manufacturers, distributors and retailers need to keep product origin and safety information for longer, for environmental and safety reasons. A design life of 40 to 50 years is not unusual in industrial equipment or transport. Operators need to access maintenance data for servicing, or in case of unexpected failures.

AS ORGANISATIONS LOOK TO EXTRACT MORE VALUE FROM THEIR DATA, AND STORAGE COSTS FALL, THERE IS A CLEAR TREND TOWARDS KEEPING MORE DATA, FOR LONGER



Home

News

BBC assures UK Parliament digital transformation plans are on track

Transforming, refreshing and mobilising IT infrastructure at Ford dealer group

Editor's comment

Buyer's guide to composable business

Indefinite storage: What it is and why you might need it

The IT systems used to maintain equipment in the 1980s were very different from those in use today, and those we will use 40 years from now will be different again.

“If you look back in history to 80 years ago, we didn’t have this problem. It was a paper problem,” says Patrick Smith, field chief technology officer for EMEA at supplier Pure Storage. “Fast-forward another 80 years, and you will expect to see several paradigm shifts in that time.”

The need to store data for longer is coupled with growing datasets, as Smith describes it, with each subset of data, such as component, manufacturer, location, materials, manufacturing process and dates, adding to the exponential increase. The challenge is to create ways to store data that can cope with that growth, as well as the typical hardware refresh cycle, without the need to move data wholesale every three to five years.

“If you look at the healthcare world, the aim is to store the data in a format that is not tied to any particular software package so we can go and retrieve it in the future,” says Smith.

This is likely to mean a further level of abstraction between hardware and data, as well as new data storage technologies.

OPTIONS FOR INDEFINITE STORAGE

Options to store data beyond the design life of current IT equipment range from the simple – good hardware management and ensuring redundancy – to cutting-edge science. Among the more extreme options are using data etched by laser into glass, developed by Microsoft as [Project Silica](#), and [DNA-based storage](#). This, if it can scale, promises very high-capacity, durable storage.

But in the near term, the emphasis is on improving the durability of storage media such as flash, and ensuring future applications can read data from current storage media. Even if IT teams can copy data to newer media, it is of little use if the data cannot be read. For this reason, the industry has developed common formats, such as PDF/A (which dates back to 2005), and self-declaratory data, such as the self-contained information retention format ([SIRF](#)). These allow for software obsolescence. CIOs can exploit the fact that storing data for longer is becoming easier.

“If you look at data five, 10, 15, 40 or 100 years ahead, the platform is going to be different, the hardware will be different, the software is going to be different,” says Freeform’s Lock. “That is even if you can physically see the bits and bytes.” ■