What Multi-Academy Trusts should know about Cloud MIS

Vanessa Pittard

This paper highlights why Cloud matters in the management of information and data across schools, and why leading Multi-Academy Trusts (MATs) are shaking off outdated and expensive legacy systems in favour of modern, cost-effective Cloud-based infrastructure and management information system (MIS) software. Harris Federation switched to a new MIS solution last year, achieving crucial operational benefits as a result and making annual savings of 70% on the cost of MIS ownership in the process.

So why does legacy MIS software dominate the market when school budgets are under pressure, and how can MATs make a smooth transition to modern, Cloud-based MIS?

Back to the future

In 2011/12, I led the Technology Policy Unit at the DfE. There wasn't much technology policy around at the time, so I moved on to STEM/technology curriculum reform, then standards in English and maths.

Now an independent consultant, I've revived my interest in technology. But it feels like I've never been away, at least not from the doggedly unchanging world of MIS in schools.

The MIS paradox

Management information systems (MIS) and related applications play a vital role in a range of school functions, including timetabling, recording assessment, attendance and behaviour, communicating with parents, managing transactions and analysing progress and performance. MIS software has developed over time to accommodate these functions, but the systems and technology platforms in most schools have not changed significantly since the historical switch from DOS to Windows-SQL in 2002-2005 when their purpose extended to secure storage and transfer of defined datasets to the DfE.

Fast forward, adding applications and interfaces along the way, and today's school MIS operation is complex and costly to run, manage and support. And it often fails provide the access and integration that schools need, not without a price tag, leading to duplicated effort and unnecessary teacher workload – perverse in light of today's modern Cloud-based technology and anywhere, any-device accessibility.

Meanwhile, the move to Cloud IT and related web-based software has reduced the cost and complexity of IT systems elsewhere. Public as well as private-sector organisations are turning to cloud computing to consolidate, reduce costs and improve services.

Cloud technologies, including Private Cloud[1] and the use of HTML5-based software, are cheaper, more reliable and secure[2]. In contrast, the 'legacy' MIS, found in over 80% of schools, is clunky, expensive to run and is, in many schools, creaking at the seams.

The paradox and central question is: If the use of MIS is so critical to schools, why hasn't the MIS operation kept up with crucial changes to technology?

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[1] Defined by Gartner as a form of cloud computing that is used by only one organisation, or that ensures that an organisation is completely isolated from others. Includes client datacentres employing the same cloud computing infrastructure as that used on the Internet.

[2] http://www.gartner.com/smarterwithgartner/is-the-cloud-secure/

Signs of change

I worked with several leading Multi-Academy Trusts during my time at DfE. Many wanted their MIS to better meet their needs as a MAT. They're doing the sensible thing – tendering competitively to find the solutions that do this best.

What's so different about Cloud-based MIS?

Cloud applications, services or resources are made available to users on-demand via the Internet. Legacy MIS such as Capita SIMS are 'thick client' applications, held and accessed either from school servers, or central servers combined with software on local Windows devices.

Processing and storage

Legacy systems can consume as much as 50-fold RAM and draw greater resources such as power, space and cooling than Cloud. The result of switching can be staggering, as Harris Federation found when reduced its server estate from over 40 to 4. Legacy MIS need Windows 10 workstations, entailing

updates and upgrades and drawing on device capacity in competition with other applications.

Access to data - A Cloud-based MIS uses modern internet protocols to enable secure access to information and data in differing locations through a variety of interfaces and devices. In contrast, services enabling access to SIMS online attract additional cost - SIMs Learning Gateway, for example, which offers a way into aspects of the SIMS package, and the more recent SIMs Teacher App.

Integration of data – Cloud computing standards make for easier integration of MIS

applications (including third party apps), enabling operation 'as one' in real or near-real time, with data integrity being maintained.

Harris Federation's switch to Cloud MIS
Rigorous assessment, data and information

Harris uses rigorous termly tests at secondary, standardised across its academies, and standardised assessments at primary in reading, mathematics and writing. Harris's 'HELM' analysis tool, covering all phases of education, supports the monitoring and management of pupil progress at KS2 and KS4.

Each academy and the MAT needs access to a detailed analysis of assessment data across primary, secondary and sixth form, plus data on attendance and exclusions, student and staff contextual data and other indicators.

Needless to say, an effective MIS is central to this.

> Harris Federation's experience demonstrates that, even in a complex environment, change for the better can be achieved without disruption. MIS functionality can improve, hours of teacher time can be saved and the MIS bill can reduce - by at least £520k annually for Harris compared to the legacy model – the equivalent to £13,000 per school, with further savings enabled beyond this.

> **Harris Federation**
> The Federation works with struggling schools in London and the south-east whose results and performance are previously, and sometimes historically, very poor. The Federation comprises 44 academies – 20 Primary and 22 Secondary, two all-through schools and, a shared Sixth Form across 10 of its Secondary academies. The Federation's overall Progress 8 score is the highest of any large MAT and its Primary academies were significantly above average in all three performance measures – just six out of 95 MATs achieved this nationally.

Harris Federation's 'HELM' Analysis Tool
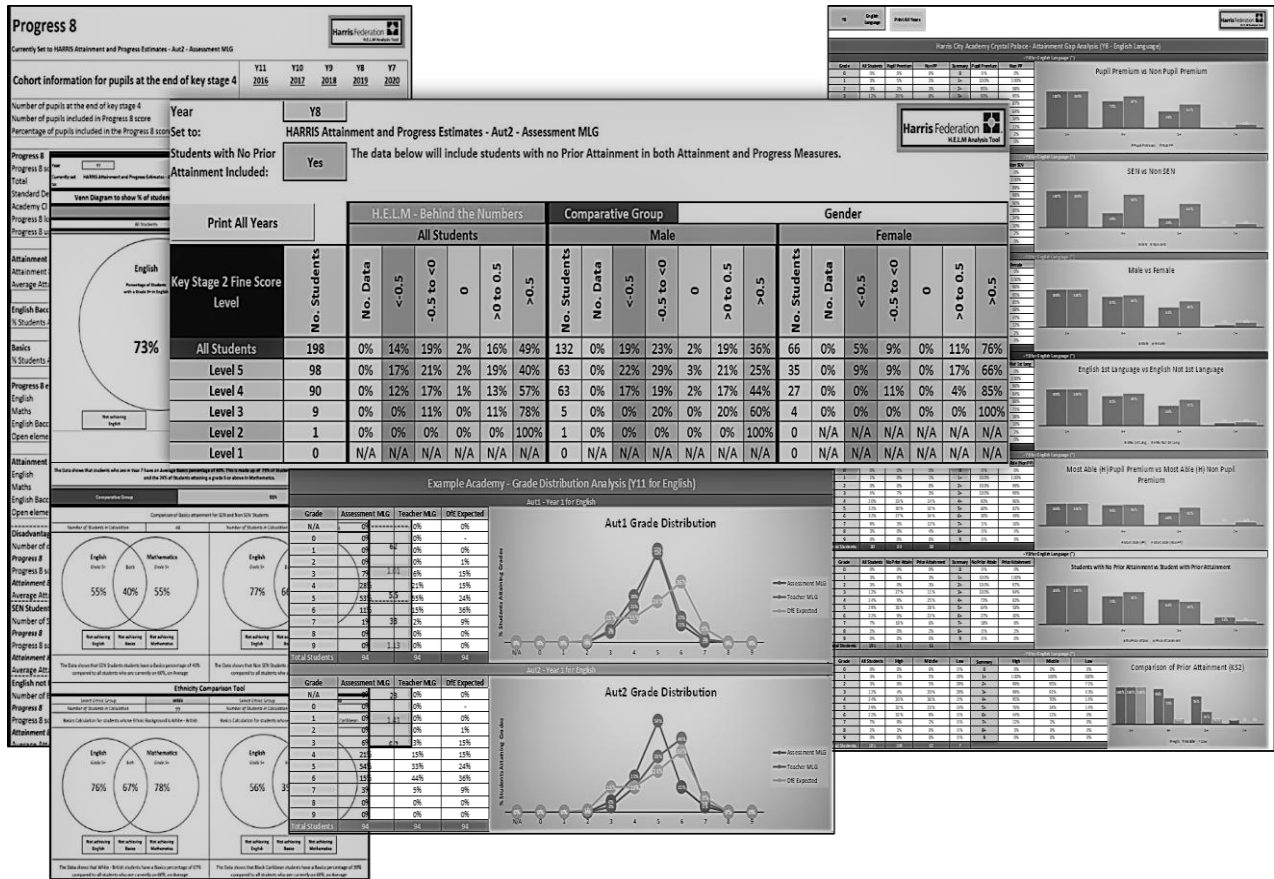
The opportunity

License renewal dates in schools allowed Harris to explore switching to a new MIS. Harris wanted to consolidate disparate systems and build on MIS functionality to suit the needs of the MAT, including a unified MIS for the virtual sixth form, which operates across the Trust.

Procurement

The Federation used the government's Crown Commercial Services (CCS) IMLS RM1500 Framework to streamline procurement and ensure legal compliance[3].

After sending a list of requirements to all approved MIS suppliers, three responded to Harris's invitation to tender. The eventual successful bidder, a Cloud-based MIS provider[4] met every criterion, delivering these at significantly lower cost than previous services supplied by Capita SIMS and Advanced CMIS.

Requirements

Harris consulted on and set additional goals for the system which were not met by current arrangements. These were:

- Removing the need for double and manual entry of data
- Linking all areas of academy data
- Reducing the number of data sources
- Enabling data to be 'live' and quickly accessible
- Ensuring data analysis practices were less time consuming
- Getting HELM to work effectively across all phases of education.

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[3] Now superseded by G-Cloud 9 https://www.gov.uk/guidance/g-cloud-buyers-guide
[4] Bromcom Computers Plc

Technical and infrastructure changes

Harris had previously employed a hybrid infrastructure comprising Facility CMIS servers on 20 sites and centralised servers for 20 schools using SIMS. Harris moved all 40 schools to the fully-clustered Private Cloud set up, illustrated here.

Technical improvements delivered as a result were significant.

These included:

- Reduced space and power required for hardware from over 40 servers to four.

- Capability to support most mobile devices and an adaptive design enabled by HTML5.

- Single interface for all Academies and reduced multiple accounts and log-in.

- System upgrades completed by the supplier remotely, usually taking less than an hour for *all* sites, as opposed to an hour to a day *per* site previously.

- No client updates, no service manager or need for infrastructure support.

- Simplification through fewer third party apps aside from of a single module

- Very good resilience and Disaster Recovery (DR) due to *real-time* data

Harris's Clustered Private Cloud Set-Up
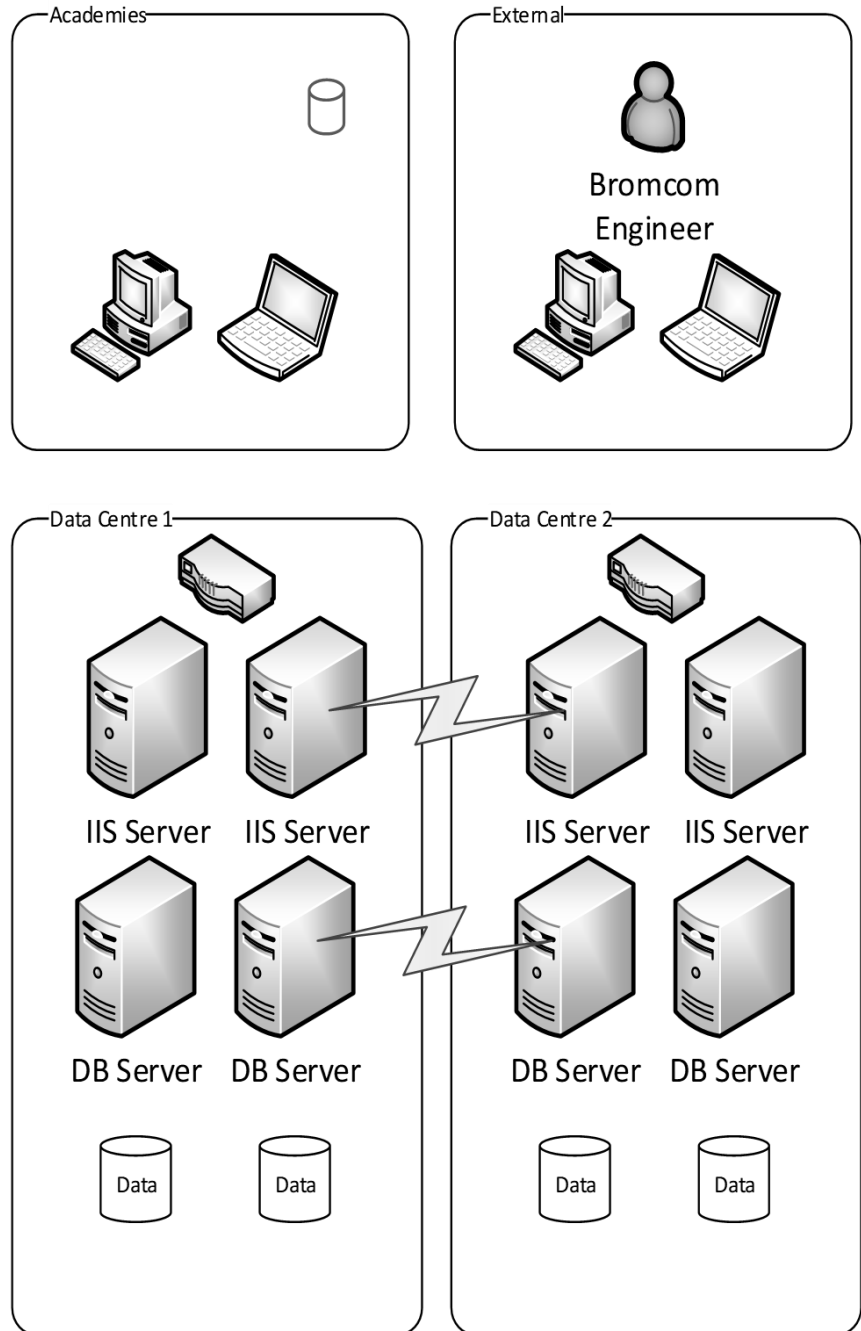
transfer, with almost 100% uptime.

- Flexible/scalable hosting options.

- No loss of data, compared loss of up to a day's data previously to rebuild from back-up.

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Managing the transition

Considering the complexity of previous systems and the size of the Federation, the transition to a new MIS was surprisingly smooth. The supplier managed this transition supported by Harris project management.

Little work was needed by the technical team at the Federation to migrate the data and make the switch to the new system.

Migration of data from legacy servers in schools was staggered, covering four academies per week for 11 weeks. The supplier copied existing databases, creating test migrations for schools to test data before Go-Live.

On Fridays, databases for four academies were backed up and sent to the supplier, followed by Go-Live the next Monday, when old databases were switched off.

The Harris team provided tailored training for *specialist* MIS roles - covering office managers, timetablers, attendance officers and admin staff - of eight intensive training days for two delegates from each academy.

Due to the intuitive design and interface of the new MIS, the only training required for *teachers* was a 10-minute presentation on the morning of the relevant Go-Live day. 2,500 teachers are now using the system without formal training.

> "We didn't believe that a migration from one MIS to another could be done so quickly or easily, so we asked the supplier to prove it and within a few days we had a large Secondary migrated into a test environment."
>
> Harris Federation IT Manager

Benefits of switching MIS

Beyond technical improvements, the benefits for staff and functional enhancements were considerable. Crucially, the Federation achieved these at the same time as reducing overall MIS costs.

Benefits for staff

- Thousands of staff hours saved on manual and duplicate data entry due to simplification.
- All information in one place rather than scattered across multiple apps.
- Minimal training due to intuitive interface.
- Access any time, any place and on any device.
- Multiple tasks can be carried out simultaneously.
- Easily customisable reporting templates and tools.

Functional enhancements

- A sixth form virtual solution delivered – available for other Sixth Form providers, and forming the basis of a new Data Aggregation Tool.
- Integration of Harris's assessment and behaviour models and reporting template
- Integration of Evidence Recording Requirements in Early Years - allows users to record evidence and attribute it to the EYFS statutory statement.
- Assessment simplification, HELM Analysis Tool and Harris KPIs developed with Excel Add in, Attendance and KPI trackers open to all users
- Single Central Register (SCR) recording tool with 'live' data extracts HELM integration within MIS in development.
- Comprehensive analysis of Post-16 outcomes

From multiple apps to a simpler system

A key shift in the process was the move away from separate third-party apps, for parent payments, homework management, EYFS recording and the like, to a system integrating these functions.

This simplification enabled many of the listed benefits to be realised, and accounts for around 25-30% of the cost savings.

The Harris team recognised that colleagues who had worked closely with previous systems might fear change of this kind and therefore managed these issues actively through training and communication.

But Cloud MIS solutions integrate well with third party apps, so the Federation made judicious choices about which were needed, choosing to retain one application as a result.

Comparison of costs

Harris considered *total* MIS costs - MIS licencing is just part of the picture. The Harris team compared total costs over a five-year period for three candidate solutions, covering:

Infrastructure:
- Server purchase (spread over five years)
- Windows licences (servers)
- Electricity (estimated at £500 per server per year)

Licencing:
- SQL licences
- MIS licencing and implementation costs
- Third party licences, including apps, add-ons and SMS fees
- Additional development costs for bespoke solutions

Staff time:
- System Upgrades (Harris technical staff days)
- Migration Costs (Harris technical staff days)

Annual savings

Annual savings from the new MIS operation compared to the legacy client server solution were £520,000 - equating to an average of £13,000 per school.

The switch also offered the Federation the opportunity to make additional savings. The Federation has been able to rationalise data management, releasing resource to schools towards improving outcomes.

Though not costed by Harris, the move to Cloud also reduces reliance on Windows 10 desktop devices, offering potential for further savings by reducing the cost of hardware refresh.

Furthermore, a simplified system means that the cost of providing MIS support for schools, either in-house or third-party, is also reduced.

Total costs per year – comparison of three solutions (approx.)[5]

	Infrastructure	Licences, SMS fees & software development.	Staffing – system upgrades and migration only	Total
Solution 1: *Client in-school server solution, 3rd party apps.*	£70,000	£650,000	£34,000	£750,000
Solution 2: *Non-cloud centrally-hosted, 3rd party apps*	£3,000	£880,000	£34,000	£920,000
Solution 3: *Cloud-based 1x3rd party app.*	£13,000	£195,000	£22,000	£230,000

[5] These costs are from 2016 and may not exactly reflect current pricing, which of course can change.

The wider picture

Cloud IT in the public sector

High on the agenda

Legacy MIS fails to meet standards advocated in the government's Cloud-first policy[6]. The Government Digital Service (GDS) promotes 'Cloud First' for public-sector IT services.

GDS advocates Cloud solutions first with two broad aims in mind: to reduce costs (significantly) and *lessen the risks that result from complexity inherent in legacy IT systems*. These include reliability and security risks.

"When procuring new or existing services, public sector organisations should consider and fully evaluate potential cloud solutions first before considering any other option. This approach is mandatory for central government and strongly recommended to the wider public sector."

Government Digital Service

What the Government Digital Service says about the risks and benefits of legacy systems versus Cloud-based (GDS 2016)[7]	
Latest technology	On-premises commercial or self-developed IT solutions require budget, effort and planning for upgrades. **It is very hard for any organisation to keep up with the constant demand for upgrades and security patches**.
Easier to support and use	Non-cloud solutions often depend on client software installed on the user's computer. This **client software has to be installed and managed along with all other applications installed locally**. To stay in business the service owners need only to stay up to date with the browser, operating system and device choices of customers.
Reduced complexity	Customisation is limited in cloud software systems, and the service provider manages any that is needed, **reducing complexity that makes support difficult and upgrades complex and risky**.
Elasticity	**Even on-premises IT solutions with great scalability designed in have limits, and those limits are often within reach.** For Cloud, there are no delays associated with waiting for servers or other capacity when scaling up. **There is no long-term investment and no cost caused by unused capacity.**
Upfront investment	Cloud Software as a Service (SaaS) is typically pay as you go. There's **no upfront investment**.
Pricing	On-premises solutions require a business plan that looks at today's pricing, and some years of maintenance and support in the future. It is very **hard to work out the real cost of an on-premises solution**. **Cloud services keep getting cheaper**. Pricing is usually very simple and transparent, and there are no hidden costs to worry about.
Security	Using a browser to consume data means there is less information stored on devices. Upgrades and security patches are constantly applied. The **size and expertise in security teams of cloud providers makes for high levels of assurance of data security**.

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[6] NIST standards. See: https://www.nist.gov/news-events/news/2011/10/final-version-nist-cloud-computing-definition-published
[7] Summary of:
https://governmenttechnology.blog.gov.uk/2016/07/22/why-we-use-the-cloud-supporting-services/
https://governmenttechnology.blog.gov.uk/2016/08/02/why-we-use-the-cloud-security-and-efficiency/

School MIS market

Little sign of change

Despite Cloud First, Cloud-based MIS has been slow to take off in schools. Analysis of data from the summer 2017 School Census shows Capita as the dominant MIS provider, with SIMS representing over 80 per cent of the market.

Little has changed over recent years despite a growing number of well-designed, flexible Cloud-based MIS solutions available in the market.

Addressing barriers

Limited knowledge of newer MIS solutions

While many leadership teams are knowledgeable about MIS issues, misunderstandings persist, which act as barriers to change.

For example, I found uncertainty about whether a Cloud-based MIS support secure transfer of data to the DfE as SIMS does (which of course they do). There are fears that valued apps such as online payment solutions can't be integrated (they can), and beliefs that Cloud-based MIS can't be adapted to suit a school's needs (they are generally more adaptable).

Fear of disruption

One of the largest concerns expressed is that schools can't face the transition to a new MIS.

School MIS suppliers summer 2017					
Secondary[8]			Primary[9]		
Supplier	No. schools	Share	Supplier	No schools	Share
Advanced Learning	255	7.5%	Advanced Learning	204	1.2%
Arbor	22	0.6%	Arbor	117	0.7%
Bromcom	100	2.9%	Bromcom	71	0.4%
CCS-SIMS	2,951	87%	CCS-SIMS	13,344	79.4%
iSAMS	21	0.6%	iSAMS	1	0.0%
PupilAsset	2	0.1%	PupilAsset	275	1.6%
RM SMS G2	24	0.7%	RM SMS G2	1,992	11.9%
ScholarPack	3	0.1%	ScholarPack	654	3.9%
SCHOOLPOD	13	0.4%	SCHOOLPOD	37	0.2%
WautonSamuel	0	0.0%	WautonSamuel	7	0.6%
Total	3,391		Total	16,796	

There are strong fears that changing systems is bound to be problematic, and that migration of data to, and integration of, the new system will be highly disruptive.

While this may seem a rational fear, it is often based on outdated views which reflect the wounds of difficult past experience.

Technical and data standards in place today mitigate these issues, and, crucially, Cloud-based MIS providers take charge of the transition professionally with the aim of making it seamless, as the Harris Federation case study demonstrates.

Indeed, Cloud providers have honed transition management finely. This makes business sense: schools won't tolerate downtime of business-critical systems or risk failure to meet statutory obligations to transfer data to the DfE. The problem is schools trusting that this is the case, hence the importance of sharing positive experiences.

Local issues

A large and complex ecosystem of support exists for SIMS, often provided as an embedded service for schools by local authorities, or operating as a traded arms-length service.

LAs can default to the familiar, to the extent that some even avoid open tendering all together because change would create inevitable complexities and difficulties.

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[8] Includes all-through schools and middle schools deemed secondary.
[9] Includes middle schools deemed primary.

Time for change

The upshot: critical issues

Legacy MIS is outdated. As the functionality and integration of systems has expanded, so too has their complexity.

Many school MIS services are not only unnecessarily costly, they're also often held together through valiant and pragmatic local effort. I have been told by several IT managers, for example, that SIMS updates are regularly postponed in order to avoid the risk of and disruption due to the complexities of the system – and this behaviour is part of the culture.

One expert I talked to concluded that there are serious risks all round – risks which no school, LA or MAT

> "It's highly unlikely that school data systems haven't been compromised; it's just a matter of time before there's a breach and we all hear about it"
>
> MAT Technology Adviser

should ignore.

A new landscape

The landscape is changing in two respects I regard as critical:

- First, the shift to modern Cloud-based IT infrastructure (whether in-house or third party) and the use of web-based software. This trend is relentless. Unnecessarily complex, outdated technology platforms will become accepted as just that – unarguably outdated and in need of replacement.

- Second, leadership. Trust leadership teams are in a good position to take leadership of the agenda with and on behalf of schools and in a different way from LAs.

A key role for MATs

MAT leadership teams are well-placed to address many of the factors preventing change and take leadership of MIS issues for schools. Importantly, MATs have greater capacity than single schools to:

- Understand the MIS cost base for each school and for the Trust as a whole, and how this can be reduced through effective procurement;

- Provide a central MIS and support function, reducing back office costs;

- Set standards and consistent processes across the MAT to allow more efficient working and improved MAT-level reporting;

- Take professional approaches to procurement on behalf of schools - analysing and specifying MIS requirements in light of the Trust's and schools' needs; and

- Work in partnership with new suppliers where needed to enable a smooth transition to the new MIS and adapt software to meet specific requirements.

Cloud-based MIS is a MAT issue

Supporting ways of working

Several features of Cloud-based MIS benefit ways of working in Trusts and across groups of schools. These include:

- Enabling staff to access data from multiple schools at the same time with a single login.

- Getting access to the data anytime, anywhere through any device with a standard browser – therefore at no additional cost.

- More easily sharing, analysing and aggregating data across schools, through better integration and standardisation.

- Integrating a greater range of applications with the MIS to simplify systems.

- Enabling flexibility in tools for reporting, such as for Ofsted at Trust level, and rationalised support for this.

Enabling success

Consistently high-performing MATs know their academies well quantitatively.

Experts working closely with high-performing MATs say that consistency and detail in management information play a vital role in supporting

decisions to genuinely deliver improvement.[10]   They also:

- Ensure their academies work together; and

- Empower their middle leaders to make decisions, informed by evidence.

It's no surprise that leading MATs have been redefining the role of information and data in school improvement and are seizing opportunities to take a fresh look at their MIS and launch procurements for solutions to better meet their needs.

Conclusions
Scaling up savings
The Harris Case study offers a compelling case for Trust leadership teams to take a fresh look at their MIS

operation on behalf of schools. It also demonstrates the critical role that Trusts can play in helping schools reduce costs without adverse impact on educational outcomes.

Around 3,000 schools now belong to Trusts of three or more schools. If these MATs alone took the same approach up to £40m could be saved annually by schools[11].

Looking system-wide, nearly 80 per cent of our 16,800 primary schools use legacy MIS (13,344) and 87 per cent of secondary schools (2,951). If Cloud-based MIS were the norm in primary schools, the Harris study suggests that a minimum of £180m annually per annum would be saved, with £35m being released to

secondary schools in the same scenario.

These figures are conservative – they don't factor in savings on MIS support, client devices and software, or data management.

While the MIS market may be difficult to shift for complex reasons, the barriers to switching MIS for schools have never been lower – and most are perceived rather than real.

This paper demonstrates they can be overcome easily with the vision and support of MAT leadership teams.

Multi-Academy Trusts: the move to Cloud MIS is overdue.

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[10] https://roberthilleducationblog.com/academy-chains/
[11] As of June 2017, there were 484 MATs with three or more academies. Together these MATs comprised 2,996 schools (DfE data).

Local Authority dimension

I'm keen to find out more. My next paper will focus on the local authority dimension. Many hard-pressed LAs run MIS services and support for schools.

What are the realities of this, and how transferable are the Harris savings to a local authority context?

Crucially, what approaches can be taken to achieving the kind of savings Harris Federation achieved, but within a local authority setting?

My view is that the savings achieved by Harris Federation can be achieved by many LAs. But I also recognise that Local Authority contexts are different in many respects, and there are challenges.

Call to Local Authorities

The Harris Federation Case Study saved at least £13,000 per school each year on its MIS by switching. I want to examine what could be saved by a typical LA and released to schools.

Based on Harris Federation's figures, a typical local authority with 100 schools using a legacy MIS could theoretically generate savings of up to £1.3m annually by procuring smartly, reinvesting this to improve educational outcomes locally.

But these assumptions and figures need testing: What are the annual costs at school and LA level of running and supporting legacy systems, and how much could be saved?

I am keen for local authorities to come forward, share their data and evidence, and test these assumptions further[12]

About the author:

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[12] Local Authorities willing to share information about current costs and challenges can contact me directly via LinkedIn: https://www.linkedin.com/in/vanessa-pittard-13794812/