

Delivering student-centric education in today's hyper-connected world

Digitally transforming schools and universities



Trusted partner for your Digital Journey

Atos



Meeting today's education challenges through digital innovation

21st century challenges for education managers

Schools and higher education institutions face huge challenges in managing the changing demands and new pressures of today and tomorrow.

The education environment is changing rapidly. Much of that change is due to extraordinary developments in technology. Much of it is also due to the way that young people's lives and behavior are affected by the digital world, and the expectations it has created. Schools and higher education institutions face huge challenges in managing the changing demands and new pressures for today and tomorrow

- **Improving the quality of the student education and learning experience** - in response to a new culture of choice, greater competition, performance measurement by league tables, and demands for greater transparency
- **Budget pressures** - ever growing expectations from students, staff and families need financial support to deliver, but budgets are ever tighter
- **Providing students with a more personalized learning experience** - enabling greater flexibility and responding to the individual's choice
- **The global classroom** - opportunities exist to connect to students throughout the world, and to expand the traditional learning environment
- **Embracing new teaching models** - technology has spawned alternatives to rigid lecture-and-test methods, with more opportunities to offer blended learning techniques. Institutions who can offer more innovative channels and approaches are stealing the march
- **Digital innovation strategy** - so that students can exploit the emerging technology opportunities, with best possible performance.

This document sets out to explain how the educational experience is being affected and can be amazingly enhanced with a combination of innovative thinking and careful management. It focuses particularly on the benefits of the cloud revolution.

Education and technology: the perfect storm

We have seen wave after wave of technology-led change in education. Does it amount to the perfect storm? Can we harness its power?

Here are three examples.

The first two are led by the new generation of digital native students: the new freedoms that digital creates, and the popularity of social networking as a mechanism for learning collaboration.

The third is the burgeoning of Massive Online Open Courses, or 'MOOCs', where higher education institutions are presented with incredible new horizons for their intellectual property and resources outside the campus limits, but where there are also significant threats to their institutional roles.

New digital freedoms

The rapid convergence of device, connectivity and social media has created a hyper-connected world. Students' and teachers' ability to be mobile has generated an increasing sense of digital freedom and the opportunity to work where and when they choose. Technological change, and the human response to it, has created a new education paradigm - 'flipped learning'. It is a process that not only empowers students to take more control over their learning, but also offers teachers the chance to free up and enhance their roles as facilitators. The relationship between the student and the teacher is being transformed.

From smart campuses, to smart Close Circuit Television wearables, and virtual reality learning environments, the education sector is seeing a tsunami of digital change. These richer ways to engage provide data that can be used to design and inform student services and experience, with actionable intelligence about behavior and preferences that have never before been available.

In the fast-growing digital economy, data is becoming the new currency alongside money. And as Tech Giants seek to harness and share increasingly vast amounts of personal data, educational institutions are guardians of data on behalf of their students and staff. They need trusted partners who can ensure that data is stored, safeguarded and controlled safely and appropriately.

Social education

The second major trend is towards using social networking as a learning conduit. It is a powerful force in society and students want to use these networks to aid their learning. It also reflects a wider shift towards collaboration across society - encouraged from primary schools onwards. It is a trend in learning that is highly relevant in tomorrow's workplace, too.

There may be serious questions about the role of social media within education, but ultimately - even if educators and parents are worried about its presence and its role in education, banning social media sites in schools and colleges is simply futile.

Both these examples illustrate a single truth: the increasing focus in Higher Education (HE) is the student experience. It is technology that has wrought important changes in student behavior, and technology will play a major part in delivering the experience that students now demand.

Spooked by MOOCs

But educational institutions are also in the vanguard of a technology led revolution.

The growth of Massive Online Open Courses (MOOCs), for example, would not be possible without digital providers offering solutions that at first sight appear to deliver great benefits to both universities and students.

Online delivery means students can access what they want, when they want it, where they want it, and often for no cost. Campus based students can supplement their classes with MOOCs, now learning from a range of experts from their own and other universities. Distance learners can now access the best teachers in the world.

Universities can join up social responsibility aims with marketing strategies. They can provide learning to the most disadvantaged regions of the world, and increase global brand awareness.



Unlocking the potential

Inevitably of course, change also means threats to the comfortable ways of the past.

The trend towards mobile devices may provide the chance to transform student learning and empower the individual, but it also sets searching questions for schools and universities, and particularly for the ICT departments charged with devising a technology strategy.

The popularity of social networking sites challenges schools and universities to introduce ways for students and faculty to find, share and connect online both inside and outside the classroom. For some academic staff, putting students' learning decisions in the hands of unregulated networks is irresponsible.

There are also major issues associated with MOOCs: including institutional content ownership, brand positioning and competition. If students can access the best teachers from the best universities free of charge, what is the role of the teaching college or university? What is the future of face-to-face tuition if students can access what they want, when they need it?

From these and the many other examples of technology trends emerging in education, there is a single message: substandard digital technology and online resources in schools, universities and colleges just won't cut it any longer for students of any age. It will not enable institutions to deliver against the five objectives outlined at the beginning of this document.

Innovate on a firm platform

Key to delivering success in this new digital world is the adoption of robust and cost-effective strategies for technology integration. Educational institutions need to think innovatively and flexibly to prepare for digital developments of the future that we cannot even begin to imagine today. They also need a proven technology infrastructure, run with proven management practices, to ensure students and staff get real benefits from each new development.

This means technology must always be at the core of operations, comprehensively integrated in the teaching and learning process, and designed to always be responsive to external ideas and emerging trends.

It is also important to remember that with the rise of professional hosted services, the key investment in education IT is shifting from in-house ICT departments to IT services from technology suppliers who can efficiently enable the integration of education into the wider digital landscape.

The most compelling reason is that, along with the rise of student expectation, there is also a significant rise in competition. Particularly within the Higher Education sector, even geography is typically no longer a barrier for the student when deciding on where he or she wishes to learn. Competition for students and staff is rife in the USA, and Europe is not too far behind.

Schools, colleges and universities need to provide comprehensive, corporate standard IT services and infrastructures for teaching staff and the many students they serve - and balance that imperative with continuous pressure on budgets of course.

The stakes are high, especially in the higher and secondary education sectors. Failure to provide the best resources will undoubtedly hit student recruitment. IT provision is already an increasingly important feature of satisfaction surveys amongst students and their sponsoring families.

One of the best reasons for this is that often the integration of old legacy systems, combined with a significant increase in student and staff users, and the continuous advances in technology, is too much for educational institutions to handle alone. They need external partners whose expertise and core business is 21st century technology.

Integration is not just about new solutions. It also involves applying innovative thinking to get the most out of existing applications to prolong their value. By successfully combining new solutions with established ones, external partners can transform the complete enterprise architecture into a single, seamless business system.

Journey to cloud

An important step that many educational institutions are now taking is to move to the cloud.

Implementing a cloud adoption strategy means that you pay for what you use, you no longer need to look after your own IT, and it is possible to connect people, applications and data - no matter where they are. A new generation of systems and applications becomes available.

Cloud services also provide the flexibility and agility to purchase just what technology you need when you need it. Cloud is likely to have a major effect on all organizational purchasing in coming years - because of its potential to switch spend from capital budgets to operating budgets.

So how can cloud services help to solve some of the challenges faced by educational executives? One important area is the development of applications (apps) for mobile phones and tablets. Historically, it has been suppliers who controlled the applications market and decided what functionality to offer. Now, schools and colleges can select, build, and integrate their own tools using the skills of cloud service providers.

With the rise of 'bring your own device' schemes to school and university, core applications will increasingly be offered via cloud and purchased by education institutions based on a different user and billing model.

The diversity of cloud services on offer varies enormously in terms of quality and price. The critical step is that cloud requires users to learn to 'let go'. Schools and universities must get used to calling on professional services provided by third parties via the cloud. Providers must also give customers confidence that they understand the complexities of the education 'business', and can work with them to shape solutions and services accordingly.

Due to the expanding portfolio that the cloud can offer, educational establishments have the potential to harmonies cloud services and to link them all together, a process known as 'cloud orchestration'. With the various cloud services on offer many from different suppliers; it is crucial that all applications are interconnected at a technical, functional, security and management level.

Many educational institutions will shop around for different cloud services providers, and some will be able to combine the various services together themselves. Others will look for an integrated approach which is managed jointly with a service integrator who will take care of cloud orchestration on behalf of the institution.

A service integrator can also link up various cloud services with other facilities, such as those offered by other providers, and manage deploying specialized knowledge, capacity, and a structured methodology.



What can Atos offer?

Atos is a global digital services leader with 100,000 employees in 72 countries. Serving a global client base, it delivers hi-tech transactional services, consulting and technology services, systems integration and managed services. Atos is focused on business technology that powers progress and helps organizations to create their firm of the future.



Hybrid cloud orchestration

The modern education sector operates on the internet; students use mobile devices and student interactions are real time. In other words: schools and universities are digital. Digital schools and universities need to operate in an agile and cost-effective way.

To support your digital transformation, Atos has designed a Platform as a Service (PaaS) blueprinting and orchestration environment including a decision and cloudification factory approach, to create new cloud native applications and to migrate existing applications to a Hybrid Cloud Infrastructure. This is a combination of a choice of (Virtual) Private Clouds and Public (AWS and Azure) Cloud Infrastructures.



Digital transformation

As future challenges are stressing institutions' needs for efficient ways of working, Atos is your preferred partner for reinventing your business. Through our services, such as big data analytics, digital transformation and cloud adoption, we help you to realize your digital goals. This quest for more efficient, effective and safe service delivery is called the Digital Transformation Journey. Through organizational support, Atos helps you to realize your digital journey. Future challenges are tackled by a Digital Strategy, preparing your business for the future, defining the way forward and improving your current processes. As we do this together, we see it as co-creation of your digital journey, in which we help you to transform your business step-by-step, and in an agile way that matches your pace.

The Atos education portfolio comprises six key offerings listed below. Each will help your educational establishment to enhance students' learning experience while achieving essential technological shifts. We'll orchestrate whatever talent, technology, providers and resources you need to deliver your vision and meet your goals. For more information on our capabilities, please contact us.



School management systems and digital workplace

When it comes to the 'basics' needed to for run your educational institution, whether it concerns financial management and accounting systems or systems supporting your facility and resource management processes, putting students at the center is key to offer them the best-possible learning experience. This requires a tight integration with other systems in your IT landscape which manage student data (e.g. e-Learning systems and Student Information Systems). Atos can implement and configure education-focused Enterprise Resource Planning (ERP) systems and securely integrate them into your IT environment. On top of that, the configuration of management dashboards to visualize the current situation and evolutions will support decision-making and effective management.



Student management systems

To manage the relationship with your students, alumni and other stakeholders, Atos can implement and integrate education-focused Customer Relationship Management (CRM) solutions in your environment. In order to offer the optimal personalized learning experience to each of your students, insights into student needs and behavior is required. These insights can come from the rich source of student data which is available in CRM and a wide variety of other student and school management systems (Finance, eLearning, Library, Transportation and so on). With our Atos Codex Analytics platform and applying our knowledge of the Education market, Atos can bring together data from the relevant sources, analyze that data and visualize the outcome in management dashboards. The insights obtained will allow to finetune the student learning experience and offer personalized services and support (e.g. faculty will be able to offer catch-up sessions for students or offer additional exercises in the online learning system).



Big data and science

Big data

Bullion, the Atos innovative workspace for in-memory computing, has been selected in the TERALAB project to accelerate real-time research and innovation. TERALAB is a big data service platform created by Institut Mines-Telecom and GENES (Groupe des Ecoles Nationales d'Economie et de Statistiques). Institut Mines-Telecom is a public institution devoted to higher education, research and innovation in the fields of engineering and digital technology. The ambition is to accelerate research and innovation in big data analytics and to fuel talents for tomorrow's data jobs. The project's mission is to provide research and innovation stakeholders with the technological resources needed to understand the implications of big data, develop analytics tools and solutions, and create value. Research projects and big data innovations can be experimented at full-scale with the support of experts. The core of the project is based on bullion, a highly scalable platform dedicated to analytics.

Beyond the TERALAB experience, Atos is now offering the Datalake and analytics factory by Bullion. It is an appliance dedicated to accelerate the availability of analytics use cases. It is based on a software suite designed by Atos R&D and a datalake fully integrated and powered by Bullion. The main benefit of the appliance is to make it simple, allow a fast experimentation of new use cases, while avoiding the proliferation of several tools. The appliance takes the benefits of the bullion power performance and unmatched modularity.



Communication, collaboration and e-learning

Born out of the engineering DNA of Siemens AG, Atos company Unify builds on a heritage of product reliability, innovation, open standards, and security, and is recognized as one the world's leading communications software and services firms. Unify provides integrated communication solutions for many prestigious universities across the globe to deliver a new way to learn, teach, and work in education.

High performance computing

Academic researchers use high performance computing (High Performance Computing) for a wide array of scientific disciplines, both to train their students and to boost their research. Physics, chemistry, maths, medicine, life sciences, geology, and oceanography: each discipline has its specificities and its own requirements in terms of compute power for simulations and modelling. Atos, through our technology company Bull, provides institutions with the exact HPC solution they need to achieve ground-breaking discoveries:

- Bull supercomputers, from single-university systems to very large configurations for national labs, with outstanding energy efficiency thanks to the Bull patented water cooling technology
- A complete portfolio of professional HPC services to support the design, installation, operation, management, and continuous improvement of HPC infrastructures
- HPC-as-a-Service packages, for easy access to made-to-measure supercomputing resources

Across the world, many higher education institutions, such as the University of Warwick, CALMIP, the University of Reims, the Technical University of Dresden, and the University of Rijeka, have chosen Bull solutions for their HPC.

Conclusion: managers at the crossroads

Millennials (people younger than Google!) are digital natives by birth and as students; they need to be addressed as such. At the same time, the new Digital economy is on its way: in education, data-driven learning and teaching are knocking on the door.

Traditional in-house IT can no longer cope with new digital demands. Educational institutions need third party cloud service providers to deliver the kinds of hop-on/hop-off, pay-per-use computing power and storage that will keep them as agile and cost-effective as they need to be. Using Cloud as an enabler for digital transformation will enable schools and universities to optimize

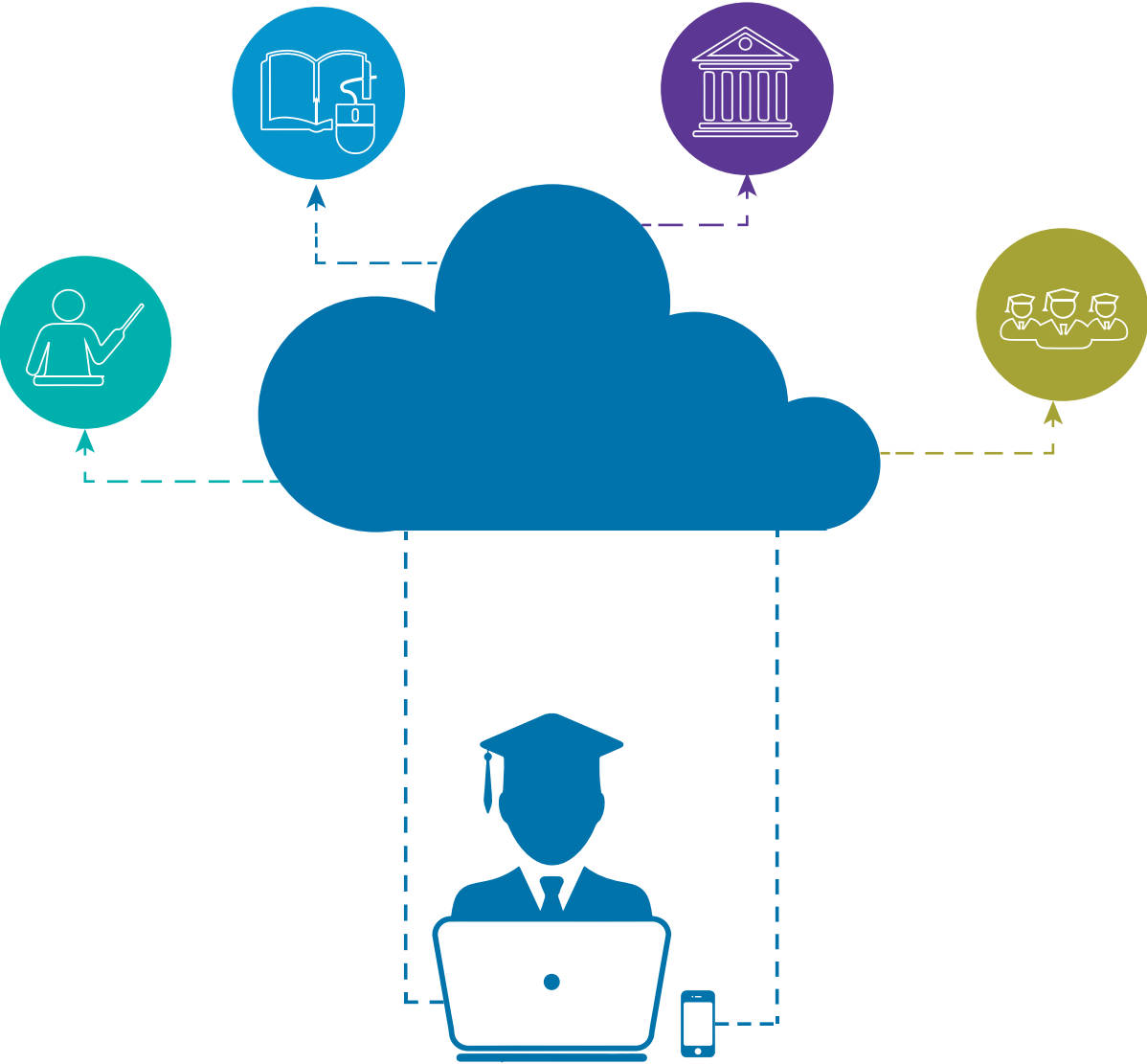
personalized services to students (and potentially life-long learning supported by big data, analytics and machine learning.)

Major choices therefore need to be made about whether schools and universities will further expand their own estates, or employ what many call a 'cloud first' policy - the first choice will always be to purchase IT in the marketplace as a service unless there are well-founded reasons not to do so.

A 'cloud first' policy is characterized by the gradual migration of IT to cloud services. By applying this policy, educational institutions can start to move from the costly capital

expenditure based budgets to a flexible operational expenditure focus that gives the flexibility to buy in the support they need, when they need it ('buying the milk rather than the cow') but also giving them the platform for change and innovations that nobody can now predict - three, five and ten years ahead.

This diagram shows the many ways you can piece together your own unique approach, combining programs on premises, some via mobile services, and some delivered via the cloud. By combining all these approaches you can create a completely hybrid model that fully answers your institution's demands.



Applications at home, in the cloud, and on the move

Cooperation with market players offers educational institutions new possibilities and opportunities. It provides them with much greater flexibility and better connection to our rapidly digitizing society. It also enables them to innovate more rapidly, ensuring that the education they deliver can be among the best in the world.

About Atos

Atos SE (Societas Europaea) is a leader in digital transformation with circa 100,000 employees in 72 countries and pro forma annual revenue of circa € 12 billion. Serving a global client base, the Group is the European leader in Big Data, Cybersecurity, Digital Workplace and provides Cloud services, Infrastructure & Data Management, Business & Platform solutions, as well as transactional services through Worldline, the European leader in the payment industry. With its cutting edge technologies, digital expertise and industry knowledge, the Group supports the digital transformation of its clients across different business sectors: Defense, Financial Services, Health, Manufacturing, Media, Utilities, Public sector, Retail, Telecommunications, and Transportation. The Group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and is listed on the Euronext Paris market. Atos operates under the brands Atos, Atos Consulting, Atos Worldgrid, Bull, Canopy, Unify and Worldline.

Find out more about us
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Let's start a discussion together



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