

SMART CAMPUS STRATEGY

Digital Transformation is often described as the blurring of the physical and the virtual. PTS's core expertise lies in the interplay between the technology and the physical campus estate, and, as an independent Consultant, reimagining this relationship to deliver a better student experience.

This brochure asks the following questions:

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1. Articulate the vision statement

We work with your senior stakeholders to develop smart campus principles to support the university strategy

2. Imagine user scenarios

We explore different scenarios of smart campus in action, tailored to the specific institution. It helps encourage imaginative thinking and makes sure that it's being done for the right reasons

3. Conduct a Smart Maturity Assessment

We analyse for you the current level of smart readiness of the university compared to the stated vision. This means looking at your operating model, technology infrastructure, culture and budgeting

5. Build a long-term roadmap

We enable you to forecast what is on the horizon so that the search for innovation becomes a continuous process

4. Create a plan of action

We help to map out who needs to do what and when, so that you have a clear view of how to put your plan into action; especially if you have upcoming construction programmes

The ingredients of a Smart Campus are already available. The challenge is following the right recipe...

It has had many names and come in many forms. Intelligent Buildings. Digital Transformation. We use the term Smart Campus. Its benefits – considerable and tantalising – are also beginning to be understood by universities. It has tempted many within the marketplace to believe and promote the idea that making it a reality will be straightforward. It won't be.

Many factors – myriad stakeholder interests, fragmentation of the smart marketplace, the prioritisation of 'Smart PR' over feasible solutions – contribute to this complexity. But they are surmountable.

PTS believes that by fully appreciating the nature of these challenges, and taking a measured, informed and independent approach, universities will be able to reap the benefits long-promised by the marketing.

This Smart Campus Strategy brochure aims to show Higher Education Institutions how to do this by following a clearly defined approach, in order to turn the 'visionary' into a reality.

WHAT IS A SMART CAMPUS? PTS defines a Smart Campus as:

"A university environment that enhances user experiences, delivers operational efficiencies, and adapts to a changing landscape thanks to:

- Connected systems, technologies and 'things'
- Highly performant Network infrastructure
- Interoperability between technologies, buildings and spaces
- Robust management of Big Data
- Leadership, vision and sponsorship to focus on driving home the business benefits"



Digital Platforms 10. Wireless 19. Holographics 1. **Big Data Analytics** 20. MOOCs 2. 11. Al Network Infrastructure 12. Adaptive Learning & Gamification 21. ANPR Monitoring 3. 13. Augmented & Virtual Reality **Cloud Services** 22. Integrated Access Control 4. Internet of Things 14. Autonomous Vehicles 23. Smart Glass 5. Digital Wayfinding 15. Drones 24. Robotics 6. Building Management Systems 16. Digital Assistants & Chatbots 25. 3D Printing 7. Utilisation Monitoring 17. Intelligent Signage 26. Biometrics and Facial Recognition 8. 5G 18. Immersive Spaces 9.



HOW WILL IT IMPROVE THE CAMPUS EXPERIENCE?



The most effective way to understand what a Smart Campus really means is to explore the various ways in which it could enhance the experience of those that have the most interest in the campus itself; the students, the academics and researchers, and the university's management and support teams.

This is a useful and enjoyable activity that we walk through with our clients. It encourages imaginative thinking amongst the stakeholders, which in turn makes them more invested in the strategy. It also ensures that any recommendations made around technology or design principles are rooted in that which matters most; the user experience.

Personal Study

- 1. Adaptive learning technology recommends literature and activities personally suited to students to help them progress
- 2. Students stream or download lectures, aided by speech-to-text technology to make revisiting content much easier
- 3. Digital assistants explore the campus online ecosystem to find information, such as viewing and booking available workspaces
- 4. Micro-credentials personalise what students can achieve and leave a digital footprint of their accreditations
- 5. Drones deliver learning materials and packages to those that struggle getting to campus





Academic Staff

- 1. Presentation facilities are configured to the lecturer's preferences on voice command
- 2. Tutors and lecturers are given meaningful data around how students are engaging with course material
- 3. All course material is digitised and can be shared on any device in any university space to allow for group discussion and collaboration
- 4. Tutors and lecturers can be informed when certain students are making themselves more or less available for group work based on presence at group sessions and contribution to written text
- 5. All technology issues are dealt with proactively and remotely

Group Study & Collaboration

- 1. Digital assistants allow groups to request the type of space that they are looking for and be recommended the optimum available spaces to suit their requirements
- 2. Online calendar of all collaboration spaces across campus means students see what areas are free at certain times for them to book, either at home or whilst on campus
- 3. Intelligent lighting and wayfinding technology makes finding free spaces easy
- 4. Students sat in already booked spaces are alerted accordingly by mobile
- 5. Sensors monitor room usage in order to release booked but unused spaces, or suggest more suitable alternatives



Wayfinding & Transportation

- 1. Students compare the cost and time of an Autonomous Vehicle journey with other public transport in real-time and decide whether to pre-book or 'Hail a Ride'
- 2. Autonomous Vehicles roam student neighbourhoods, respond to requests in real-time, and adapt their pathways based on long-term trends
- 3. Integrated CCTV, ANPR and course scheduling allocates, monitors and arranges automatic payment for parking spaces on the basis of need, not early arrival
- 4. Students are guided to their lectures with wayfinding technology
- 5. Digital signage helps students to find their bearings, and displays advertising tailored to the right demographic in real-time and based on long-term campus flow



Immersive Spaces

- 1. Augmented Reality
 - Medical, Veterinary and Sport Science students examining human/animal anatomy
 - Engineers examining components
 - Architects examining building designs
- 2. Video walls replicate different environments so that students can simulate practical scenarios from their courses, with cameras recording to allow them to review
 - Emergency services callouts for medical students
 - UN translation for languages students
- 3. Virtual Reality
 - Complete replication of the lecture experience in remote locations
 - Gym sessions cycling, rowing, running
- 4. Holographics
 - Allowing for a more geographically diverse cast of lecturers to speak at the university



Building Management

- 1. Holistic picture around building utilisation from data on:
 - Course scheduling
 - Lecture/group session attendance
 - Room bookings
 - Social media
- 2. Predictive maintenance and room adaptability:
 - Rooms, spaces and buildings adapt based on trends in usage, including lighting, temperature, configuration, CO₂ levels, power consumption and direct user feedback
 - Greater use of flexible furniture and partitions, to enable quick and automated reconfiguration of rooms
- 3. Photo-voltaic glass and kinetic floor tiles help to generate and store energy
- 4. Live statistics on energy usage throughout the campus to identify and act on trends to improve efficiency





Wellbeing & Security

- 1. Data on absenteeism and engagement with course material informs tutors and the Students' Union of potential support needs of students (to be used strictly for pastoral care purposes, with the option to opt out at registration)
- 2. Mobile-enabled campus alert systems ensure that students can call for medical or security assistance anywhere on campus with wayfinding technology to decrease response times
- 3. Campus-wide incident management system to ensure appropriate levels of response to alerts
- 4. Wayfinding allows for quick and easy access to safe spaces
- 5. Facial recognition, AI, ANPR and integration with local police data allow security teams to monitor suspicious vehicles and activity on campus more effectively and efficiently
- 6. Pre-set security configurations for access control, bollards, wayfinding and CCTV allow for quick adaptation to high security situations, e.g. fire, flood, terrorism and A&E situations
- 7. Mass notification system enabling warnings and notices to be broadcast across campus during incidents

University Management Teams

- 1. Complete overview of of the pulse of university life:
 - Space utilisation
 - Profiles of energy usage
 - Preferred spaces and room configurations
 - Transportation flow on campus, halls of residence and surrounding area
 - Students' engagement with course material
 - Security alerts and concerns
- 2. Al-assisted decision-making to optimise the above areas and significantly reduce energy, maintenance, traffic and environmental costs
- 3. Excellent smart campus showcases for:
 - Prospective students on open days
 - Current students
 - Businesses looking for graduates



WHERE IS YOUR UNIVERSITY ON ITS JOURNEY?







The exciting part of a Smart Campus Strategy is in imagining the user experiences of the future and articulating the vision. But knowing the route to your destination requires knowing the starting point. Understanding the university's current estate helps to ground the vision in reality.

This is where a Smart Maturity Assessment becomes invaluable. By measuring levels of preparedness for a Smart Campus across a number of domains, and comparing the results to the levels needed to support the ambitions of the university, a picture begins to build of the areas on which the university will most likely need to focus, in order to meet the stated ambitions.

This exercise helps universities to identify the low-hanging fruit – what benefits can be derived fairly swiftly, easily or cost-effectively – as well as testing how high a priority those areas that will require the most attention really are.

It is important to note that attaining peak maturity is not always necessary, or even desirable, for every university. Developing a Smart Campus Strategy means establishing a vision of 'Smart' that is appropriate for the particular needs and profile of the institution.

WHO NEEDS TO BE INVOLVED?

University Teams

Estates & Facilities, IT & Knowledge Teams, Students' Union, Strategy & Policy, HR & Engagement Teams, Academic & Research Community, Commercial, Security & Safety, Marketing & Communications

Technology Marketplace

Emerging Tech Start-ups, Industry Research Bodies, Manufacturers & Integrators, Current Suppliers

Professional Design Team

Architects, Quantity Surveyors, Project Managers, Stuctural Engineers, Services Engineers, Specialist Consultants, Main Contractors

Communities

HE Institutions, Other Sectors, Local Government, Local Community, Local Industry

Students



WHY SHOULD UNIVERSITIES BE INTERESTED?



The benefits of a Smart Campus come in many forms, depending on the different stakeholders' perspectives. Here are some examples of the sentiments that these groups may have within a Smart Campus environment.

"

My Campus experience is excellent – I have all of my course material at my fingertips, I get personalised support, I have no problems getting to and from campus, and I always have parking and booked space for personal or group activities

Student

We have exceeded our student acquisition and retention targets, and have opened up new revenue streams to allow us to invest back into the university

"



Senior Management



Director of Estates





I have an in-depth view of how students engage with the course material; and my lectures start on time because the technology just works!

Lecturer

"

We get really good insight on how our students access all the services available to them from advice, societies, sports and volunteering

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Students' Union



Students feel safer than ever in and around campus, thanks to an integrated system that allows us to respond to any alerts rapidly and effectively



Head of Security

"

All of our buildings are rated as BREEAM Outstanding and are WELL accredited, meaning we have achieved our goal to become a Zero Carbon Institution

Head of Sustainability



WHEN DO WE NEED TO ACT?





PTS's Smart Campus Strategies are intended to inform the strategies of the different stakeholders that have been involved throughout the process. Therefore, the earlier that your university can develop its thinking around Smart Campus, the more informed the wider university strategies will be.

We work very hard to ensure that our Strategies are imaginative yet feasible, with clear guidance on what each stakeholder should take into consideration to bring them to life. For example, will a Capital Projects Manager be able to take the Smart Campus principles and embed them into the design of a new building? Does the IT Manager understand the extent to which the network infrastructure must be future-proofed to support the Smart Campus?

These are practical steps that are vital to ensuring that the university actually derives the value expected from the strategy.

Universities are unique institutions in that they often have considerable autonomy over a whole campus or civic environment, and it is in these multi-use and multi-building spaces where Smart technologies really come to life. Therein lies a fantastic opportunity to realise something truly exciting; providing that it is considered as part of the wider strategic planning.



PTS is an independent Technology Consultancy, providing strategic advice, design and project management services on Higher Education campus masterplans, refurbishments and new build programmes.

One of our key aims is to deliver a first class technology learning and teaching experience whilst preserving the integrity of the buildings' architectural designs. We do this by understanding the interplay between people, space and technology.

We act as the conduit between Estates, the Professional Design Team and Technology to help universities craft innovative and feasible solutions to the benefit of its students, staff and business operations. We help these diverse groups of stakeholders to communicate, collaborate and stay engaged throughout the project lifecycle.

Ours is a unique position; equally adept within the realms of workspace innovation, technology consulting, and robust project management.

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To enquire about a complimentary Smart Campus workshop, please get in touch at contactus@ptsconsulting.com

